

APRIL 1920 ~ No 171

Monthly

A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago

TO CHANGE
THE SPEED TURN
THE HAND WHEEL

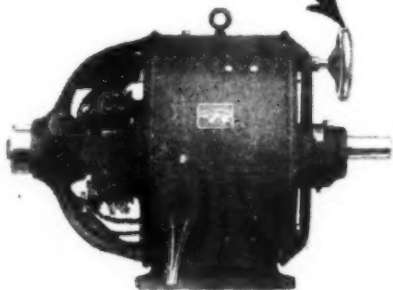


Type AS Reliance Motors are not limited to a few fixed speeds. They provide unlimited running speeds over ranges as great as 1 to 10. Speed changes are obtained without loss of power by simply shifting the motor armature.

Bulletin 1014 gives details

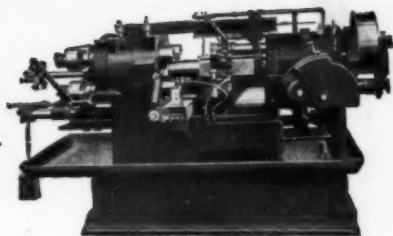
RELiance ELECTRIC & ENGINE CO.
1050 Ivanhoe Road, Cleveland, Ohio

BRANCHES: Boston, New York,
Philadelphia, Pittsburgh, Chicago



Type **AS** Adjustable Speed
RELiance MOTORS





AN AUTOMATIC IS A GOOD INVESTMENT

Each GRIDLEY MULTIPLE SPINDLE
is a specialized machine tool.

It pays to run automatic screw machines
that are built upon standards of design,
workmanship and construction.

Capacities up to 2 $\frac{5}{8}$ " diam.

Send for detailed catalog.

THE NATIONAL ACME COMPANY WINDSOR, VERMONT

General Offices, Cleveland, O.

Canadian Screw Plant, Montreal, P. Q.

Branch Offices:

NEW YORK

BOSTON

CHICAGO

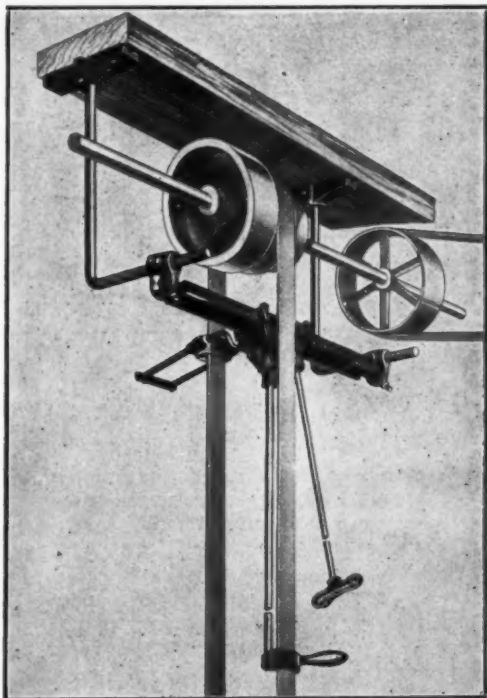
DETROIT

BUFFALO

WAREHOUSES—NEW YORK AND CHICAGO

FOREIGN REPRESENTATIVES

*Makers of Gridley Single and Multiple-Spindle Automatics
at Windsor, Vt., and Acme Automatics, Threading Dies, Col-
lapsing Taps and Screw Machine Products at Cleveland, Ohio*



K-C Mechanical Belt Shifter

The simplest, cheapest and most practical method of changing the speed of cone-driven machines. And it's **SAFE**. It is easy to attach to either wood or iron construction. There's a reason for its adoption by scores of the largest plants, which you will be glad to know about.

Write for Folder "H"—it tells

The Kremer-Cummins Machine Co.

1833-35 East 55th St.,

Cleveland, Ohio



**Prompt
Deliveries
On**



Brown & Sharpe Cutters and Hobs

Here is an opportunity to obtain Cutters and Hobs without delay. The wise man will buy now and protect himself against the emergencies of the future.

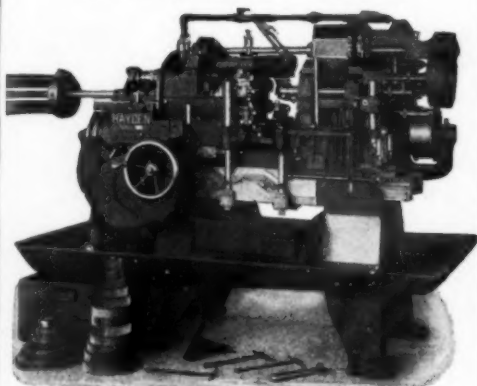
We have many sizes in stock and can furnish special sizes promptly. Write us about your requirements.

"The usual Brown & Sharpe Quality in every cutter."

Brown & Sharpe Mfg. Co.
Providence, R. I.

Cincinnati ^{Five} Spindle Automatic

The Most Universal Screw Machine
For Jobbing Work or Long Runs



48 Superior Features increase output and reduce costs

When a reputable manufacturer of standard machinery announces that he is offering an Automatic Screw Machine with 48 Superior Features for increasing output and reducing costs, it is time for those who produce or contemplate producing screw machine products, to sit up and take notice.

Those 48 Superior Features are incorporated in the Cincinnati Automatic for YOUR benefit, and the Catalog makes perfectly clear their practical benefit to the user.

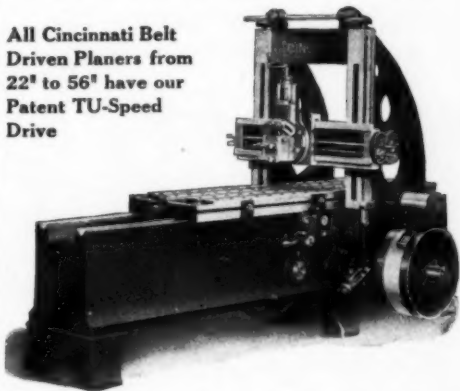
Wouldn't it be wise to send for the Catalog and satisfy yourself as to what there is in it?

Cincinnati Automatic Machine Co.
Oakley, Cincinnati, Ohio

Cincinnati Tu-Speeds

Are Better Planers—Of Course

All Cincinnati Belt
Driven Planers from
22" to 56" have our
Patent TU-Speed
Drive



Did you ever see a One-Speed Man?

Suppose a man had only one walking gait for up hill, down hill and on the level. He couldn't use a fast speed for hill climbing, and he would have to move everywhere at his slowest gait—his up-hill speed—at a great loss of time.

Absurd, isn't it? But is it really any worse than using a one-speed planer for roughing and finishing, or for different kinds of planing work—all at the slowest speed, of course—when the Cincinnati Tu-Speed Planer changes its speed by the shifting of a lever, while the machine is running, as easily as a man can change his walking gait, and with much of the same saving in time?

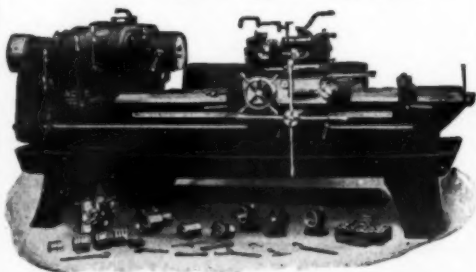
Isn't this worth thinking over pretty carefully? If it is, then speed up your inquiry and we'll do the rest

The Cincinnati Planer Co.

Cincinnati, Ohio, U. S. A.

CINCINNATI ACME —most rigid flat turret lathe made

This superior machine tool has no equal
for machining detail parts in quantities



3½x36" Bar Capacity. 16" Chucking Capacity.

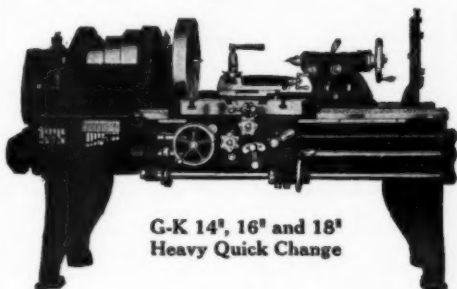
☐ It has reduced shop costs in many plants, and is ready to do so in yours. ☐ We ask you to note a few details of its construction and operation. ☐ Head is cast solid with bed. ☐ Permanent alignment of spindle with vees and cross slide. ☐ Sliding gear transmission. ☐ Minimum number of gears in use at one time. ☐ Speeds changed instantly without stopping spindle. ☐ Patented gear shifting device. ☐ Gears in constant oil bath. ☐ Cross sliding turret. ☐ Safety stops in all directions. ☐ Centralized control.

As it is becoming more and more difficult to guarantee deliveries, we urge you to make early reservations. Send us your name today.

The Acme Machine Tool Co.
Cincinnati, Ohio, U. S. A.

—the peak of production?

Many difficulties impede the way now-a-days, hence we urge you all the more to be thoroughly posted on G-K Betterments



G-K 14", 16" and 18"
Heavy Quick Change

"G-K Betterments" is the name of our small illustrated book which describes G-K Lathes in detail, and makes plain why these modern machine tools go them all "one better."

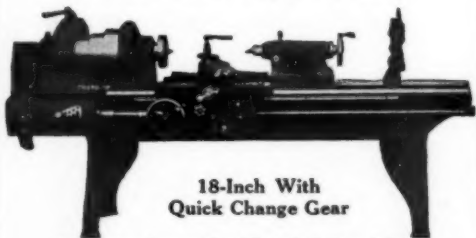
Users find G-K Lathes are second to none in helping them to attain the coveted "peak of production." We make them from 14" to 30" swing, with all the **betterments** embodied.

If you have room for a better lathe, send us your name so we can mail the descriptive book

The Greaves-Klusman Tool Co.
Cincinnati, Ohio, U. S. A.

The "Chard"

Of Practical Super-Quality



18-Inch With
Quick Change Gear

Made in sizes 16", 18", 20", 24" and 28"

The super-quality of the "Chard" does not lie in a lot of gimcracks, but in its ability to stand the gaff and to do things. It is probably the heaviest lathe made, either part by part or taken as a whole. It has a practical mechanical excellence that means heavy cuts, stiffness, accuracy, convenience, flexibility. It bores holes through bronze without tolerance of any kind. It does heavy work with ease, accuracy and dispatch. It has a super-quality of working ability that makes it a profitable investment.

May we describe the sizes in which you are interested?

Chard Lathe Company

Newcastle, Ind.

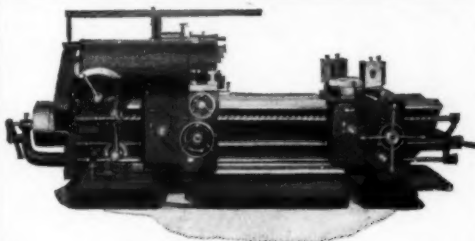
DISTRIBUTORS

THE F.O. STALLMAN SUPPLY CO., San Francisco, Cal.
 VONNEGUT MACHINERY CO., Indianapolis, Ind.
 ENGLISH & MILLER MACHINERY CO., Detroit, Mich.
 J. S. MILLER MACHINERY CO., Pittsburgh, Pa.
 MONARCH MACHINERY CO., Philadelphia, Pa.
 THE BIGGS-WATTERSON CO., Cleveland and Dayton, Ohio.
 McMULLEN MACHINERY CO., Grand Rapids, Mich.
 SAXER MACHINERY CO., Erie, Pa.
 MANNING, MAXWELL & MOORE, New York, Chicago,
 Boston, Mass., Cincinnati, O., Buffalo, N. Y., Rochester, N. Y.,
 Milwaukee, Wis., St. Louis, Mo., Seattle, Wash.
 ALFRED HERBERT, Brussels, Belgium.

STEINLE TURRET MACHINE CO.

MADISON, WISCONSIN

Originators of the Heavy Duty Full Swing Side Carriage Turret Lathe



The Tool and its Product

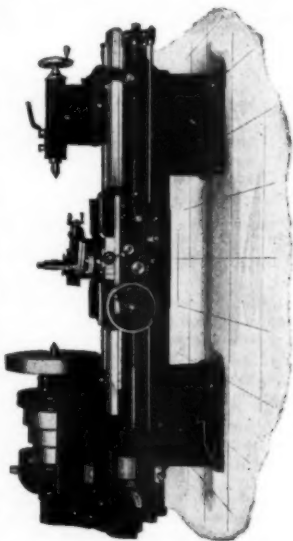
The tool invariably bears a direct relationship to its product. A good tool, well designed, and of proper construction, means accurate work at very low production cost.

There are many money saving features about the STEINLE TURRET LATHE that instantly appeal to the careful buyer. The general massive construction and ease of operation of all parts, the single pulley drive and thirty reversible headstock spindle speeds, the power rapid traverse of both carriages, the power cross feed of side carriage and the general adaptability to special tooling, enabling rapid, accurate and economical production—these are strong points well worth considering.

STEINLE Lathes are widely used by leading concerns. They can produce for you as they are now producing for others.

Why not send us your blue prints of representative work adapted to production in a machine of this character and get our recommendations on production and tooling?

SIDNEY LATHES—For All Requirements



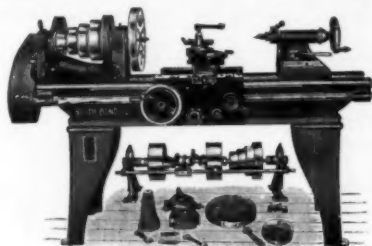
The Sidney Line of medium and heavy duty lathes includes a lathe for every class of work, regardless of the size or type of shop you are running.

Lathes of medium duty in 14, 16, 18 and 20-inch swings, and of heavy duty in 15, 17, 19, 25, 27, 30 and 36-inch swings.

Send for Bulletin No. 45.

THE SIDNEY MACHINE TOOL CO., Sidney, Ohio

South Bend Lathe



Made with straight or gap bed.

Price includes equipment as shown in illustration

For the Machine and Repair Shops

13" Lathe.....	\$385.00	18" Lathe.....	\$ 735.00
15" Lathe.....	483.00	21" Lathe.....	900.00
16" Lathe.....	550.00	24" Lathe.....	1250.00

With Beds from 4 ft. to 16 ft. in length.

South Bend Lathes have been on the
market 14 years. Over 23,000 in use.

New York Office: - 2½ Murray Street
Boston Office: - - 65 Oliver Street
Philadelphia Office: - 33 N. Seventh St.

Free catalogue mailed on request

South Bend Lathe Works

Established 1906 South Bend, Ind. 430 E. Madison

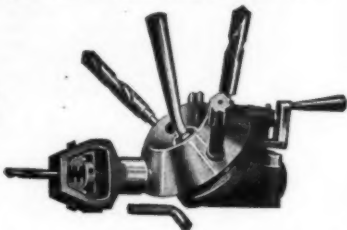
The Newman 5-Hole Tailstock Turret

Soon Pays For Itself In The Tool Room

Will fit
any lathe

Attaches in
15 seconds

Sent on
10 days'
trial



It makes any lathe as good or better than the best turret lathe. Indispensable on runs requiring quick set-ups. A user says: "It more than paid for itself on the first job." Write for details

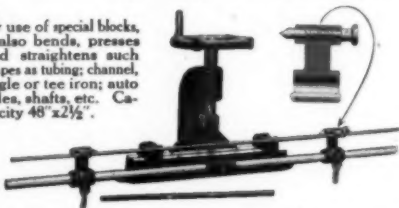
NEWMAN MANUFACTURING CO., Cincinnati, O.

Because of Bends and Kinks in Rough Bar Stock

Does Your Lathe Leave Low Spots?

The "Towsley" Straightener Will Eliminate This

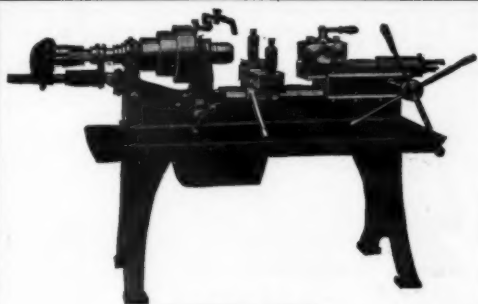
By use of special blocks, it also bends, presses and straightens such shapes as tubing; channel, angle or tee iron; auto axles, shafts, etc. Capacity 48" x 2 1/2".



A one-man machine. The base is one solid casting 16" x 28", heavily ribbed, well braced and planed true on bottom.

Are you an economizer? Then get in touch with us

JOHN T. TOWSLEY MFG. CO., 1037 Woodrow St., CINCINNATI, OHIO



MODEL "D"

Turret Lathes and Screw Machines

Now Ready for Delivery

**Designed for Rapid Manufacturing of
Parts Requiring Several Operations**

MADE IN FOUR SIZES:

- No. 2 { $1\frac{1}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{3}{8}$ " Hole Through Spindle.
- No. 3 { $1\frac{5}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{3}{4}$ " Hole Through Spindle.
- No. 4 { $1\frac{7}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{1}{2}$ " Hole Through Spindle.
- No. 5 { $1\frac{7}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{3}{4}$ " Hole Through Spindle.

**With or Without Power Feed to Turret Slide.
Mechanically Perfect and Fully Guaranteed.**

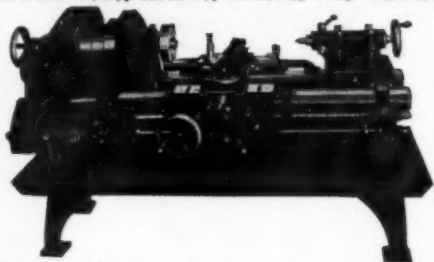
Manufactured By

Smurr & Kamen Company

328-330 N. Albany Ave., Chicago, Ill.

"LEHMANN LATHES"

Three Sizes—16/18¼" and 18/20¼" and 22/24¼" Swing. Beds 7' to 17'



These are strictly high-grade engine lathes of superior design and thoroughly good workmanship and material. Built for accuracy and production.

Write for complete specifications and details. Do it today—NOW.

LEHMANN MACHINE CO., 608 S. Broadway, ST. LOUIS, U.S.A.

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels

" No. 0 32 " "

" No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table

" No. 9 Tilting Table

" No. 10 "

Boring attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.

12, 16, 20, 24 and 30 in., 7 ft. tables and guard.

Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

Chicago Machinery Exchange

1211-1227 Washington Boulevard, Chicago

Willard MATTMAN BRATTEN **Lathe**

**High Power—All Geared Head—Quick Change
Of Superior Build for the Tool Room**

With Motor Mounted on Headstock



**13" High Power
Quick Change
Tool Room Lathe**

This is a high grade, up-to-the-minute machine which can be relied upon for maximum accurate production every day in the year. We ask you to note a few of its features:—

All gears are chrome nickel steel, and all sliding gears are hardened.

All speed changes are selective inside the headstock, and all gears in headstock run in oil.

There are available six direct speeds. Six further speeds are obtainable thru the back gears, or a total of 12 speeds.

It's impossible to throw in 2 speeds at the same time.

All shafts in the head are equipped with SKF ball bearings.

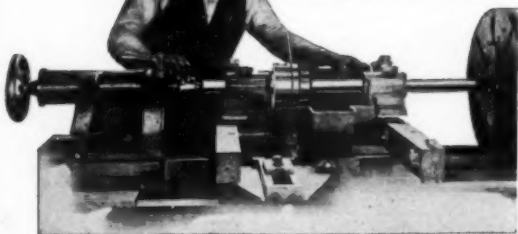
*Write for description of Willard Tool Room or
Engine Lathes, either All-Geared Head or Cone Type.*

The Willard Machine Tool Co., Inc.

F Street, Box 784

CINCINNATI, O., U. S. A.

MUMMERT-DIXON FACING HEADS



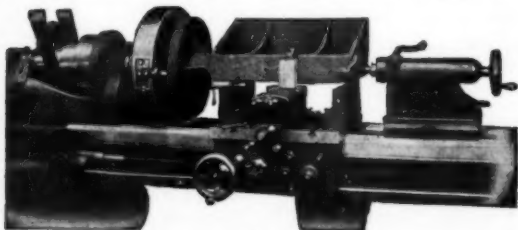
Two Ways of Using Them on a Lathe—

There are many more jobs which they will do so much more quickly and economically than you can do the same work in any other way, that they will quickly pay for themselves.

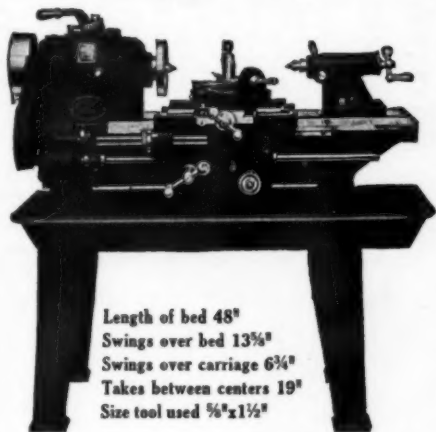
Used on milling machines, boring machines, drill presses, anything that carries a spindle or will drive a bar. They are fitted with ordinary lathe tools, which travel by automatic self-contained feed across the face of the head. There are two feeds available on the smaller sizes and four on the larger ones, giving a range ample for all practical requirements.

Write for Illustrated Folder

Mummert-Dixon Co., Hanover, Pa.



It's Good Business To Use Adams Short-Cut Lathes



Length of bed 48"
Swings over bed 13½"
Swings over carriage 6¾"
Takes between centers 19"
Size tool used ⅝"x1½"

Is it good business to run large lathes for turning quantities of short duplicate parts?

On Adams Short-Cut Lathes the investment, up-keep and operating costs are substantially less. And yet, within their capacity, they will turn out more work than a larger lathe, being more easily and rapidly handled. They are accurate, economical and efficient.

The floor space occupied is only 4'6"x2'4".

*High-grade in every particular
Glad to furnish complete information*

O. R. Adams Manufacturing Co., Inc.
Rochester, N. Y.

Monarch Lathes

give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes**. Built in all styles and with any attachments desired.

Sizes 10 to 30-inch Swing

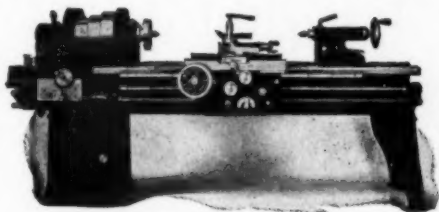
Sold by a leading Machinery Dealer in every machinery center.



The Monarch Machine Tool Co., Sidney, Ohio

Boye & Emmes Lathes

Time-Tested for Heavy Service



18-in. Instantaneous Change Gear Engine Lathe Double Back Geared—Double Plate Apron

BOYE & EMMES LATHES have been long and favorably known for their practical utility, and for keeping abreast of the times—often a little ahead—in their improvements. Their high reputation is based upon shop performance.

The 18-in. Instantaneous Change Gear Engine Lathe, illustrated above, is a good example of Boye & Emmes design. Any pitch or feed is instantly obtained without the removal of a gear. It has reverse in the head for screw cutting, reverse in the apron for feeds, power cross feed, etc. Best materials and bearings—of course. All cylindrical parts accurately ground; all flat bearings scraped to surface plates.

*Better have us post you fully on
this splendid lathe*

The Boye & Emmes Machine Tool Co.

2245-2251 Spring Grove Ave., Cincinnati, Ohio

A MODERN 14" LATHE WITH SINGLE OR DOUBLE BACK GEAR CARROLL-JAMIESON



Actual Swing 15 $\frac{1}{4}$ "

Has 32 Changes of Feed
without Removing a Gear

This lathe is noted for its convenience, durability, simplicity and accuracy.

It cuts all standard and odd threads from 3 to 64 per inch, including 1 $\frac{1}{2}$ " pipe threads, right or left hand—and one handle or knob effects all necessary adjustments.

It is regularly equipped with thread indicator. Taper and draw-in attachments can be furnished at extra cost. All tools are fully guaranteed and tested to the highest point for accuracy. The quality is higher than price.

Write for full details

THE CARROLL-JAMIESON MACHINE TOOL CO., BATAVIA, OHIO

THE TILTED TURRET

A CLEAR TRACK FOR THE STOCK



The TILTED TURRET MACHINES

are accurate and productive.
Fifteen years' of thoroughly
tested service. A size for
every class of manufacturing.

Ask the User

Catalog "H"—Its Free

WOOD TURRET MACHINE CO.

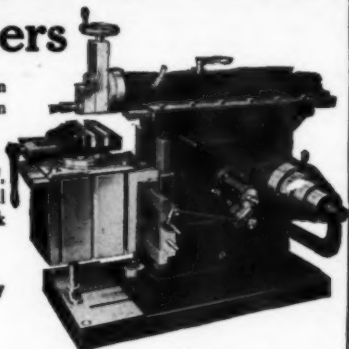
BRAZIL, INDIANA, U.S.A.

Shapers

The best medium priced Shaper on the market.

Built in 16", 20", and 24" sizes, all back geared crank machines.

A few for early delivery.



The Osborne & Sexton Mchy. Co.
Columbus, Ohio

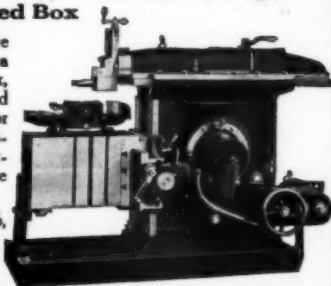
THE COLUMBIA Extra Heavy Crank Shapers

With Speed Box

Cut shows how we equip them with a geared speed box, friction clutch and brake, suitable for single pulley or motor drive. Also furnished with cone drive.

Made in Sizes 16, 20, 24 and 28 in.

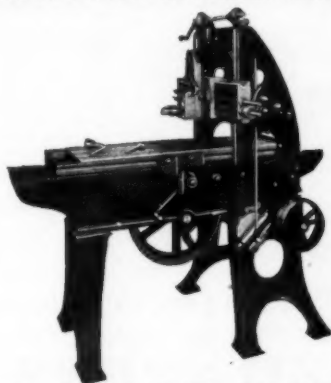
Write for detailed description



The Columbia Machine Tool Company
Hamilton, Ohio

Lower Costs On Lighter Work

With the Lee Tool Room Planer



Made in Sizes 16x16x42" and 16x16x54"

THE LEE PLANER means lower costs on lighter work. It fills the gap between the average planer and the usual shaper found in the tool room. Because of greater ease in handling, it is more efficient and economical for small work. It saves in overhead, power, labor, time and space.

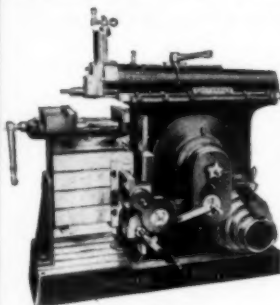
Designed to fit the requirements of the tool room, the "Lee" is also equally adaptable to manufacturing large quantities of small parts. The materials and workmanship are of the highest standard. It is, in short, a rapid and accurate machine which gives satisfaction to every user.

*The complete description is interesting and valuable.
Just drop us a card NOW and we'll gladly send it to you*

The Frank H. Lee Co.

MACHINERY DIVISION
Danbury, Conn., U. S. A.

STAMCO for **SERVICE AND SATISFACTION**



16" Back Geared Crank Shaper

The "Stamco" is a superior machine for all heavy service. It is built on a very firm, extra deep base, with a column of extra depth amounting to about 15", and of extra width at the base. This gives the machine a solid foundation.

It is very accurate, being adjustable to 1000's of an inch. It has a keyseating capacity of 3". Table, 14" x 17". Cross feed, 24". Vertical feed, 15".

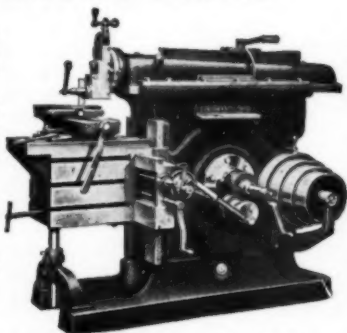
How about investigating?

THE STREINE TOOL & MFG. CO., New Bremen, Ohio

SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

28" and 32"
Back Geared
Crank,
Single Pul-
ley Drive.



The Smith & Mills Co. Station B.,
Cincinnati, O., U.S.A.



Rhodes 7" Horizontal Shaper 3½" Vertical

—does all your light shaping and slotting as accurately as your larger machines—and relieves them from the pressure of small jobs. Quickly converted from a horizontal shaper with 7-inch stroke to a 3½-inch vertical slotter adjustable to 10 degrees.

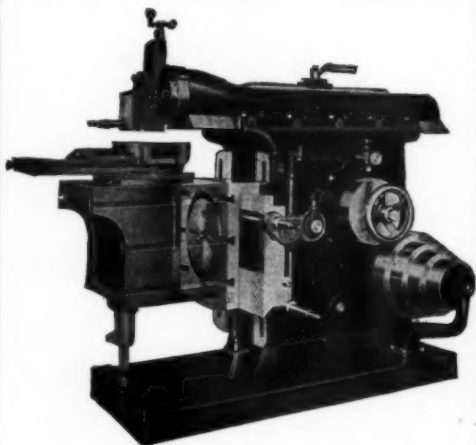
Easily set up, occupies but little space and can be operated by unskilled labor.

Write for illustrated circular

DEPT. H. L.

The Rhodes Mfg. Company
Hartford, Conn.

Milwaukee Shapers



MILWAUKEE Back-Geared
Crank Shapers are built in
16-in., 20-in. and 24-in. sizes.

UNEXCELLED in Rigidity,
Accuracy, Power, Production
and Simplicity.

Milwaukee Shaper Co.

1144-1146-1148 Holton St., 518 Prairie St.,
Milwaukee, Wisconsin

No. 14 Duplex Universal Vertical Miller and Shaper



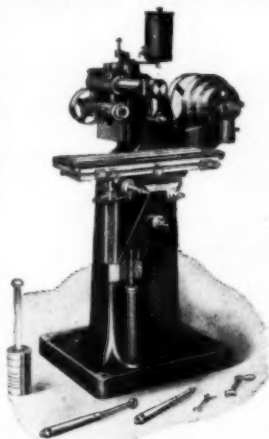
Table Feeds—9" Transverse. $18\frac{1}{2}$ " Longitudinal. 18" Vertical. Shaper Stroke Maximum 6". Vertical movement of Milling Spindle $3\frac{1}{2}$ ". Heads adjustable 360 degrees right to left, and 40 degrees front or back from center.

Machine will drill, bore, ream, slot and plane at any angle at one setting of the work.

Write for catalog

COCHRANE-BLY CO., **Rochester, N. Y.**

Small parts handled faster, easier and cheaper than on big, expensive millers



**No. 1
U. S.
Improved
Hand
and Weight
Feed
Milling
Machine**

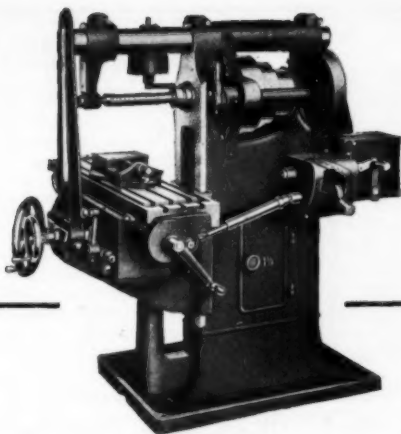
The cardinal features of this machine are—(1) a wide range, (2) quick adaptability, and (3) greater power than any similar machine of its size. This enables it to handle an unusual variety of work with great economy, much of which it will do in much less time and at far less cost than is possible on large, costly millers.

Furnished if desired, with Universal Milling Attachment, adapting it for die sinking, profiling, etc.; or with Plain Milling Attachment; also with a full line of accessories. Can be arranged for motor drive and oil pump attachment.

Write for specifications and full particulars

The United States Machine Tool Co.

Cincinnati, Ohio, U. S. A.



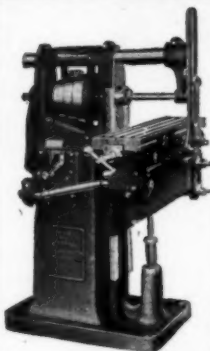
AMERICAN No. 1½ PLAIN **MILLER** BACK GEARED

A Quick, Accurate, Reliable Tool
Nothing Better for Manufacturing

This machine is strong and rigid without being clumsy, for it is exceptionally convenient of operation. It has large bearings, accurate alignment, simple adjustments, and an oiling system which provides ample lubrication. Wherever used the quantity and quality of its output have been most gratifying. Furnished with Vertical Spindle Milling Attachment if desired.

*Your inquiry will please us; the machine will please you
Just drop us a line today and we'll do the rest*

The American Milling Machine Co.
Cincinnati, Ohio, U. S. A.



2-B Plain Miller

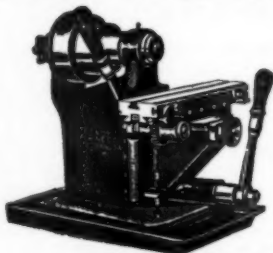
An Unusual Machine

One of its unusual features is the Arbor Support, provided with a self-aligning ball bearing. The large double ball bearing will stand any cut for a long time without perceptible wear. As with this construction the arbor need not be hardened, there is no distortion of threads and no tendency of cutter to run out of true when nut is tightened. This insures long life without wear, prevents chatter, and insures great accuracy on parts requiring exact spacing and thickness.

Write for specifications, showing the unusual design in detail

THE DAVENPORT MFG. CO., Meadville, Pa.

Just The Machine



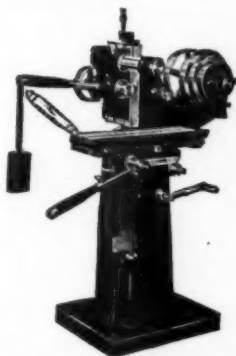
for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

Send for descriptive circular

The Carter & Hakes Machine Co.
West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.
 WESTERN AGENTS—Marshall & Huschart Machinery Co.,
 Chicago, St. Louis, Indianapolis.

"Whitney"
Hand & Weight (feed) Milling Machine
Thousands In Use



The Sliding Head makes the vertical feed independent of the horizontal feed. This feature permits the work to be held close to the table and enables the machine to be used for profiling. As the head is accurately counterbalanced, light milling may be done on long and heavy pieces without danger of breaking cutters.

The spindle is driven by interchangeable side pulleys giving six spindle speeds with three grade cone and four with two grade cone.

The Table has Hand Lever Feed, also Crank Feed operated by Rack and Pinion.

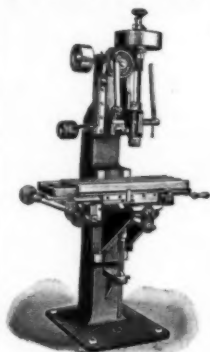
The Pinion shaft is mounted in an eccentric bushing to allow for adjustment of pinion with rack.

The weight attachment feeds either head or table automatically and by varying the weights the pressure may be adjusted to a nicety.

Prompt deliveries

The Whitney Mfg. Co., - Hartford, Conn.
Chains—Keys and Cutters—Hand Milling Machines

For Smooth, Accurate Work

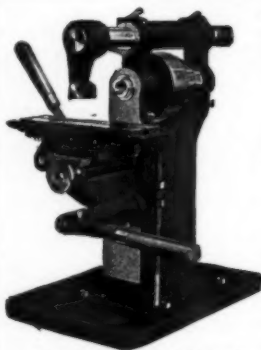


The Clough No. 2 Vertical Miller With Slotting Attachment

Combines expedience with unerring exactness, being accurately adjustable to 1000's of an inch. Unexcelled for blanking dies, die sinking, metal patterns and light machine work.

Size of table	28" x 9 1/4"
Lengthwise auto feed	21"
Cross motion	9"
Vertical adjustment	15"

Write for complete data
R. M. CLOUGH
Meriden, Conn.



Burke's No. 3 Bench Millers Are Seasoned Tools

Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

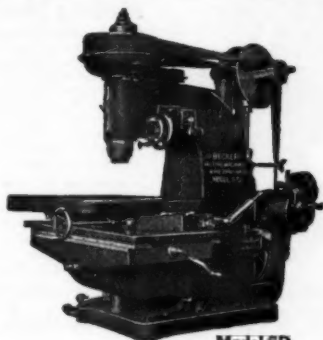
Longitudinal feed, 6 in.; traverse feed, 3 1/4 in.; vertical motion of knee, 8 1/2 in.; table surface, 3 1/2 x 12 inch.

Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co.
Conneaut, Ohio

BECKER

The Machine that Gives the Smooth Finish



Model SD

Superiority of Ranges

is a salient feature that has earned a high place in the Machine Tool Industry for

Becker Belt Driven Millers

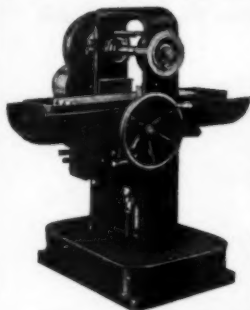
The Internal Belt Drive provides an elastic feed to the spindle, eliminating chatter and prolonging the life of the cutter used.

As a production tool The Becker is without an equal.

Circular S701 tells why. Write for it today

Becker Milling Machine Co.
Hyde Park, Boston, Mass.

For REAL RIGIDITY—



Briggs High Duty Milling Machine

The direct geared drive close to the end of the arbor and the heavy table with its powerful screw feed enable the "Briggs" to cut hard steel on wide cuts to the full power of the belts without the slightest chatter. The rigidity of relation between the arbor and table is ideal.

It excels in convenience of operation, and is more powerful than any other miller of its size and weight. It is equally valuable for tool room, machine shop and manufacturing department.

If economy interests you, write for complete details

GOOLEY & EDLUND, Inc., Cortland, N. Y.

Relieves and Replaces Big Millers

Davis Milling Attachment
Does 90% of the Small Jobs

**Converts
any Drill
Press from
14 to 42-in.
swing in
2 Minutes**

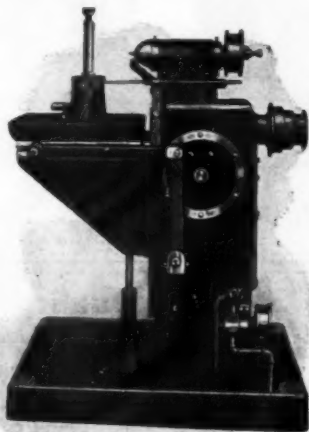


Relieves your large millers, comes in handy spotting castings, milling ends of bosses, etc., and does 90% of the lighter jobs as well as a \$1,000 machine; cuts keyseats perfectly. We also have low factory prices on our cylinder reamer for reboring the Ford car, and on our reliable air compressor. Write for details.

Hinckley Machine Works, HINCKLEY, ILL.

Perfect

**Gear Tooth Rounding
At Much Less Cost**



The CROSS Gear Tooth Rounder

Is guaranteed to round 24 teeth per minute, any pitch $\frac{1}{2}$ or finer, and every tooth a perfect half circle—the only perfect form for sliding mesh gears. Yes, that's revolutionary—but it's true—and we guarantee it.

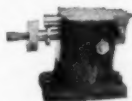
Cross Gear & Engine Company
Detroit, Michigan

Patented here and abroad; sold ONLY by us

Unerring Accuracy Guaranteed

"Schipper" 10-Inch Universal Index Centers

Light but Rigid

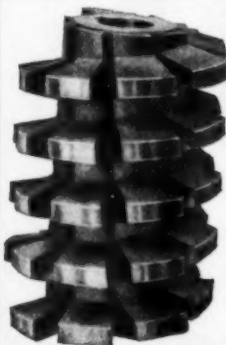


These centers are *always* accurate. The metal is distributed where strength is most needed so that they are very rigid and yet weigh only 85 lbs.

Graduated head can be set at any angle from 10 degrees below the horizontal to 10 degrees beyond the perpendicular.

Why not ask about them now?

Schipper Machine & Tool Co.
Aurora, Indiana



Quality Tools

comprising

**Form Milling Cutters
Hobs and Special Tools**

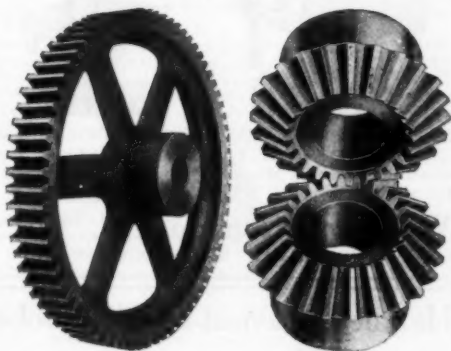
We have built into these tools the highest quality of material and workmanship. The resultant tools entirely justify the great care taken in their manufacture. A superficial observation does not fully reveal their superior character, but when they are put to the test of performance their quality is shown in larger and better production.

*The way to find out is
to put them to the test*

Michigan Tool Company
Detroit, Mich., U. S. A.

Standardized Boston Gears

1200 Sizes



**300,000 in stock for
Immediate Delivery**

At CHICAGO BRANCH and at the FACTORY

Other large stocks at our Distributors
in Leading Cities

**Send For Our 1920 Catalog
Giving Complete Specifications**

Boston Gear Works

Branch and Salesroom

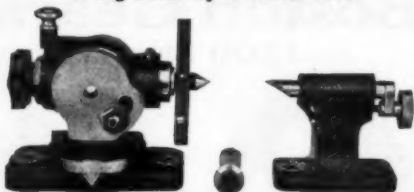
623-625 W. Washington Blvd., CHICAGO, ILL.

Main Office and Factory

Norfolk Downs - - QUINCY, MASS.

For Straight Milling—All Kinds

A Big Economy at Small Cost

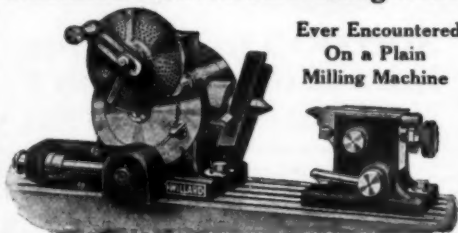


One of our Semi-Universal Dividing Heads and a low priced Hand Miller hooked up together, leaves the expensive Universal Miller open for the difficult work. It's a sure economy. Write us today.

Whiting & Comstock, 32 Union Place,
Hartford, Conn.
Export Department, 77 Broad St., New York City

Handles Heaviest Dividing Jobs

Ever Encountered
On a Plain
Milling Machine



Willard 10' Universal Dividing Head

Centers swing 10" in diameter. *Clamping Device* is unusually rigid and runs true in every position. *Spindle* has No. 10 B. & S. taper, and is easily adjustable for wear. A large *Index Plate* allows indexing up to 100; a chart shows divisions obtainable up to 380. Made either right or left hand. Complete description on request.

THE WILLARD PRESS & TOOL CO., CINCINNATI, O.

Washing Metals By Machine

FOR years metal working industries have confronted a problem of expense and time in washing metal parts.

Even today there are many concerns stumbling along with clumsy methods because they are not familiar with this efficient mechanical washer, which is cutting time and labor costs in hundreds of America's leading manufacturing plants.



Washing Machine

The old open tank, hand-labor method is gone—the work is now done twice as fast with half the number of men. The Crescent has a violent stripping water action directed from whirling wash-arms above and below that cuts away every speck of grease and oil from metal parts of every size and shape. Drives against every surface, top and bottom, inside and out, but cannot harm the finest thread or delicate edge.

**CRESCENT WASHING
MACHINE COMPANY**
(formerly The Nivin Mfg. Co.)

843 Larrabee St., Chicago

Send for your copy of
"Speeding Factory Pro-
duction With a Cres-
cent." There's no obli-
gation.

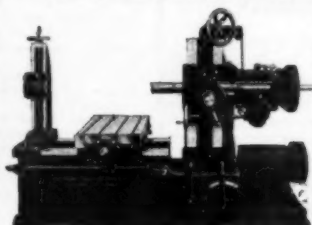
Just a few of the hundreds
of plants where Crescent
Metal Parts Washers are
used and highly endorsed:

Burroughs Add. Mach. Co.
Gillette Safety Razor Co.
Edison Phonograph Co.
Henry Ford & Son
International Har. Co.
Timken-Detroit Axle Co.
Gorham Mfg. Co.
B. F. Goodrich Rub. Co.
Studebaker Corporation
E. I. DuPont-deNemours
Co.



Morris Maximum Production

Horizontal Boring and Drilling Machine



Second to none in either quantity or quality of work. All steel gears; all bronze bearings; helical spindle gears. All control levers within easy reach of the operator.

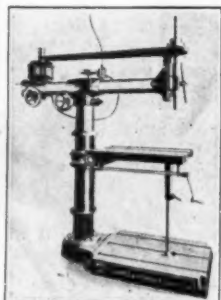
It will pay you to get a line on this production booster

The Morris Machine Tool Co.

Cincinnati, Ohio, U. S. A.

RADIALS - LATHES - BORING MACHINES

HAWES Radial Drill



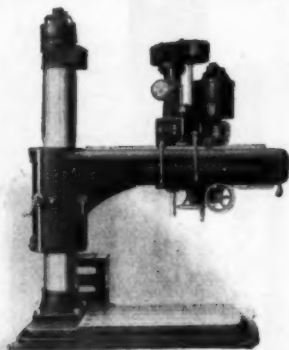
We manufacture both wheel and belt polishing machines; Semi - Automatic polishing and grinding machines; Emery grinders, 10 in. to 10 ft. center to center of wheels; Gang Drills.

We manufacture machines in both belt and motor driven type.

Write for Bulletin No. 10

C. L. HAWES, Ashtabula, Ohio, U. S. A.

ANNOUNCING THE NEW
Ryerson-Conradson Twin Motor Driven
High Power Plain Radial Drilling Machine



The Ryerson-Conradson Radial Drilling Machine, which in many respects differs radically from the usual design, is based on a broad mechanical knowledge, as well as a very extended experience in electrically driven machine tools. **Drilling, Tapping, Boring and Reaming** operations can be performed with equal efficiency.

A comparison with the typical present style machines is interesting. The Ryerson-Conradson Twin Motor Driven Radial Drill has but four shafts and sixteen gears, as compared with thirteen shafts and thirty-three gears in one of the standard machines, without sacrificing the range of work which can be performed. The spindle and driving shafts are all contained in a single cast box of rigid construction. Only spur gears are employed, eliminating bevel gears and the consequent trouble of keeping them aligned.

The new Bulletin 4001-H gives complete information

JOSEPH T. RYERSON & SON
MACHINERY

CHICAGO

ST. LOUIS

DETROIT

BUFFALO

NEW YORK

The Rockford Horizontal **A Wide Range Drilling, Boring and Tapping Machine**

With Lateral and Vertical Head Adjustment Operates Anywhere on a Surface 18" x 36"

The table is stationary. The lateral and vertical adjustment permit the operation of spindle anywhere on a surface 18" high by 36" long, which places this machine in a class by itself for performing a number of operations at one setting on large, odd-shaped pieces. It is particularly profitable on large repetition work.

Combines delicate adjustment with great strength. Has the capacity for 2" high speed drills and for boring up to 6" or over according to feed used. Offers a choice of six driving combinations.

**A great economy tool
Better let us post you**



THE ROCKFORD DRILLING MACHINE CO., ROCKFORD, ILL.

DRILLING FOR PROFIT



HAMMOND

Sensitive High-Speed
Radial Drills

Wherever there is light drilling and tapping to do a "Hammond Radial" should be installed. The flexible arm, which can be moved almost instantly from hole to hole, speeds up the work and reduces your production costs.

Write and find out how you can cut your light drilling and tapping costs 25% to 33%

The Hammond Mfg. Co.
Cleveland, Ohio, U. S. A.

No. 2 "Barrett" Horizontal Cylinder Boring Machine

Driven by 10 H. P. Variable Speed 4 to 1 Motor



A machine of great power, rigidity and convenience. It will bore out a cylinder 48 in. long at one setting.

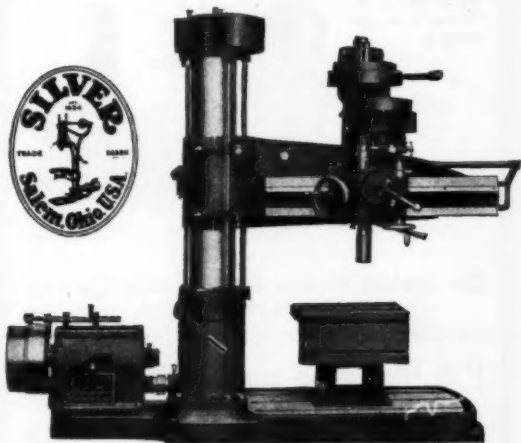
The bed is 13 ft. 1 in. long—widened portion 48 in. wide by 56 in. long, and 18 in. high. The boring bar is 5 in. in diameter, with a continuous travel of 48 in. in either direction. Our patented quick change mechanism provides 10 different feeds.

For more complete information as to its uses, design and construction, write to—

BARRETT MACHINE TOOL COMPANY, - - Meadville, Pa.

Builders of all sizes of Single and Double Bar Horizontal Cylinder Boring Machines for boring and facing simultaneously steam, gas, gasoline, pump and locomotive cylinders, also for boring the guides of engine frames and facing off end, besides boring and facing the crank shaft bearings simultaneously.

Have You Looked Into The New Line of Silver Radials?



Built in 2½, 3 and 3½ Foot Sizes

IN CASE YOU HAVE NOT, there's an agreeable surprise awaiting you. Silvers ought to be good—and they are—for we put in some four years experimenting and testing in every conceivable way before we O. K'd them.

And our 65 years of experience in building drilling machines surely takes us out of the amateur class. Silvers embody a number of patentable features not found on other drills, and which, for economy's sake, you ought to know about. Ask for the circular today.

The Silver Manufacturing Co.

Box 295, Salem, Ohio, U. S. A. Founded 1854

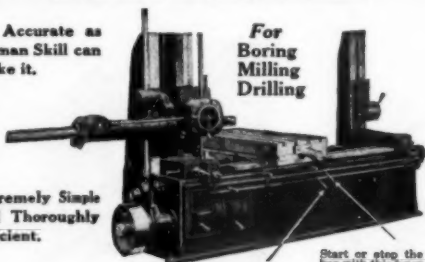
LONDON PARIS BRUSSELS NEW YORK GENOA SIDNEY CAPE TOWN

The LAMBERT— Horizontal Boring Machine

As Accurate as
Human Skill can
Make it.

For
Boring
Milling
Drilling

Extremely Simple
and Thoroughly
Efficient.



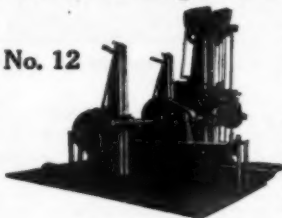
Start, stop or reverse
any feed with this lever

Start or stop the
bar with this lever.

The Lambert Machine & Engineering Company
Cleveland, Ohio, U. S. A.

P. & H. Drilling and Boring Machine

No. 12



1. Rapid traverse in each direction can readily be manipulated by slight adjustments on the hand wheel.

2. The spindle speeds are obtained by quick change gears and variable speed motor for either A. C. or D. C. current resulting in the following speed variations:

A. C. Current, 12 to 542 R. P. M.

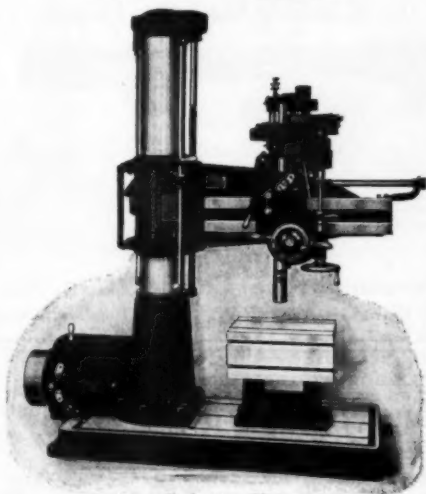
D. C. Current, 10 to 445 R. P. M.

3. The four changes of feed available for each speed are made by the operator without leaving his position near front end of spindle.

Pawling & Harnischfeger Company
Milwaukee, Wisconsin

Mueller Radial Drill

It's A Leader



**Dependable
Accurate
Easy to Control
Powerful**

Surely a machine for discriminating users.

*If you want an introduction to this
exceptional radial drill, just write to*

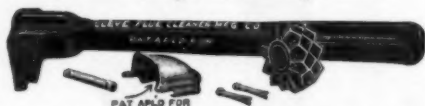
The Mueller Machine Tool Company

ESTABLISHED 1902

Radial Drills and Lathes.

CINCINNATI, O.

**There Is Nothing Better Than The
"Duplex" Emery Wheel Dresser
For Maintaining Fine Cutting Surfaces**



Unexcelled for leaving a fine cutting surface on grinding wheels. The patented aluminum hood protects the operator against flying particles. Either of two cutters is furnished: (1) the "Diamond" Cutter, designed for truing large, coarse wheels; or (2) the "Improved" Cutter, for truing medium and fine wheels. These cutters run on a bronze bushing.

Sure we send them on trial—just say the word

Cleveland Flue Cleaner Mfg. Co.
321 Frankfort Ave., N. W., Cleveland, Ohio

**By Changing Gearson a
Minster Jr. Drill**

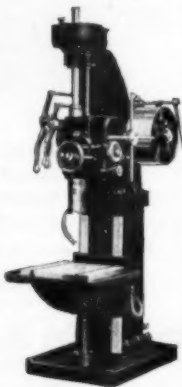
**You Can Obtain Any
Desired Speeds and Feeds**

This feature enables the "Minster Jr." to cover an unusually wide range of work. It has power and strength for heavy boring as well as accuracy for light drilling. It is a high grade machine having a simple general construction and as few parts as possible. It is always perfectly lubricated, and operates on a small amount of power.

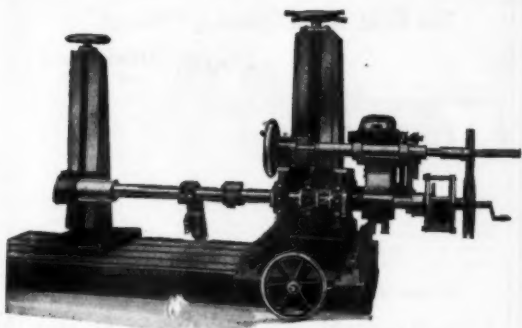
Write for Bulletin No. 30

MACHINE TOOL DEPT.

Minster Machine Co.
Minster, Ohio



Two Methods Of Boring



If you have a Pedrick Column Boring Machine you are not limited to handling boring operations in only one way; you may have a choice of which method is better for the work in hand.

This is an exclusive feature of the Pedrick machine. Write for a bulletin which describes other advantages.

The No. 1 Size, shown above, has a $3\frac{1}{2}$ " bar. Other sizes have larger bars.

Bulletin ?

Pedrick Tool & Machine Co.

3644 North Lawrence Street
Philadelphia, Pa.

A Better Drill Press Vise

The Rigid, Rapid Operating "Carroll"



Dimensions of No. 5

Width of vise 5"
Vise opens 6"
Width of jaws 5"
Depth of jaws 1 1/4"
Opening thru
center of base 1 1/2"

The "Carroll" is guaranteed to be true in any of three positions in which it is placed. It is rigid and carefully made, and will last a life time. Only 3 seconds is required to shove sliding jaw up to work and to give a turn to the clamping screw. Three sizes—3 1/2", 5" and 7".

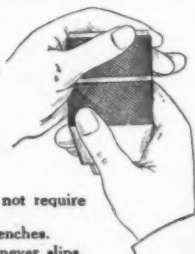
Call your stenographer NOW and write for complete details

Cincinnati Vise Company
Station H., Cincinnati, Ohio, U. S. A.

NeBaCo

Self-Tightening

Drill Chuck



Roller bearing.

Entirely self-contained. Does not require an arbor to operate.

Self-tightening. No keys or wrenches.

Quickest and easiest grip. It never slips.

Jaws grip positively and release easily.

The "NeBaCo" is the only chuck of its kind on the market. It will enable you to use a hand operated chuck on electric drills, and on sensitive or high-speed drill presses. Many manufacturers of electric drills have adopted it as a regular equipment.

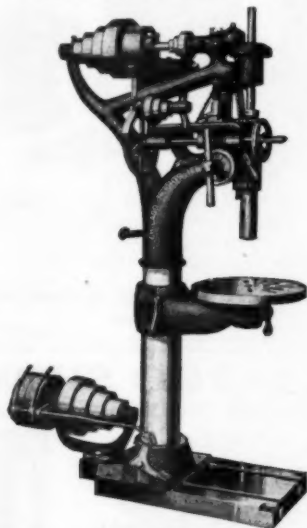
Write today for details of the "NeBaCo" and "Eclipse" Chucks

Nielsen-Barton Chuck Co., 106 S. Jefferson St.
CHICAGO, ILL.

Also makers of ARBORS for all kinds of Chucks

Make Good In Every Shop

Canedy-Otto 20" Power Drills



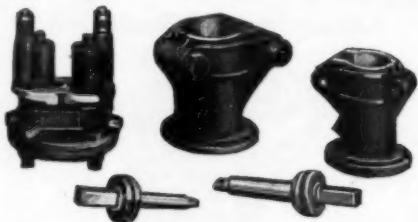
"Canedy-Otto's" are high-grade throughout, with all the graduated and automatic features of high-priced drills. We do not believe their equal can be found in the combination of durability, price and capacity for drilling up to $1\frac{1}{2}$ ". All gears are cut on automatic machines, insuring accuracy and smooth running. The large bearings are made of the best babbitt metal, with hydraulically pressed graphite cones, which increase the life of the bearings 300 to 400%. For belt or motor drive.

You can't do better; write for description and moderate price

Canedy-Otto Mfg. Company
Chicago Heights, Ill.

Manufacturers of Forges, Blowers, Drills, Lathes and Grinders

"Buhr" Drill Heads



The above cut shows the No. 02 two-spindle adjustable "Buhr" patent ball bearing drill head. Adjustable heads with from two to twelve spindles. Fixed center heads with any number of spindles.

Nelson-Blanck Mfg. Company
Detroit, Mich.

LIFE IS TOO SHORT

To Drill Only One Hole At a Time

**You Can Drill
3 Holes At Once
With**

**Sellew Adjustable
** Drill Heads ****

with a proportionate increase in output. We also make special Drill Heads with fixed spindles.

Why not get together?



SELLEW MACHINE TOOL CO.,

**Pawtucket,
Rhode Island**

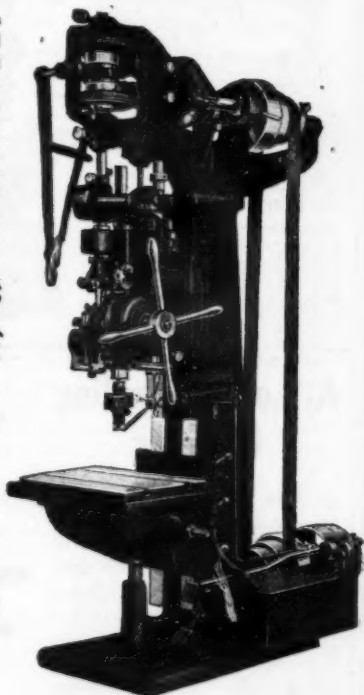
At One Setting —

Drills, Reams, Taps and Counterbores

A Turner Turret is to the ordinary drill press, what the turret lathe is to the common lathe. The rotation of this Turret is automatic, so that when spindle is returned to its full height, it automatically indexes to the next spindle. The

Turner Turret

makes available an extremely wide range of speeds by means of minor gear changes; speeds may be different for each spindle, and all may be easily changed, to meet special conditions of stock or tools. Complete data in Bulletin FH. The Quint Turret is described in Bulletin QH.



TURNER TURRET

Turner Machine Company
DANBURY, CONN. and Newark, N. J.
Incorporated with Turner, Atherton & Co., Ltd.,
Denton, Manchester and Stockport, England

Within the Range of This "Demco" No. 40 Machine are Drilling, Milling and Tapping

One of the most practical machines ever constructed. The "Demco" No. 40 is especially adapted for toolroom work, such as making dies, jigs, etc. It has both positive and sensitive feed. Has a cone clutch engagement for tapping. Drilling capacity is $\frac{3}{8}$ " and tapping capacity is $\frac{1}{8}$ ". An accurate, handy, durable and very useful machine.

Don't you want full description?

The Demco Machine Tool Co.

706 Frankfort St., N.W. Cleveland, O.

Dale Brewster Mch. Co., New York, Chicago

E. A. Kinsey Co., Indianapolis, Ind.

Badger-Packard Mch. Co., Milwaukee, Wis.

Monarch Machinery Co., Philadelphia, Pa.

Wm. C. Johnson & Sons Mch. Co., St. Louis

W. M. Pattison Supply Co., Detroit

Berger & Carter Co., Los Angeles and San

Francisco, Cal.

The Walraven Co., Atlanta, Ga.

Syracuse Supply Co., Syracuse, N. Y.



A Lot of Drilling Capacity

This 16-inch, No. 7 Drill is a sturdy, reliable, highly efficient sensitive that will give you more service and satisfaction than you have ever bought for so small a sum. Takes drills up to $\frac{3}{4}$ -inch, and handles them effectively. It gets results.

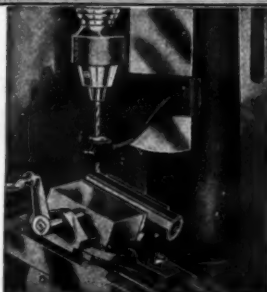
Let us have your address for complete description.



Francis Reed Co., 43 Hammond St., Worcester, Mass.

**Drills the
hole exactly
where you
want it —→**

**—and the tilting
table with grad-
uations in de-
grees gives you
the correct angle.**



The Drill Guide is only one of the many conveniences embodied in the up-to-date

Knight Milling and Drilling Machines

They are such wonderful economizers of time and labor in both tool room and shop, that they immediately jump into the "popular" class. Ingenious mechanics are seldom "stumped" with a hard machining job when there's a Knight to help them out. Your choice of four sizes.

W. B. Knight Machinery Co.

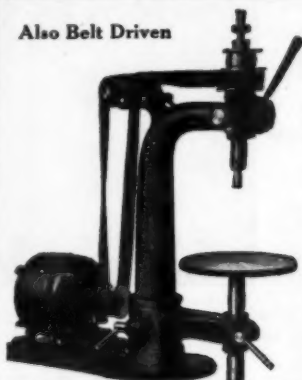
3920 W. Pine St.,

St. Louis, Mo.

*Unequalled
for
dies,
tools,
jigs
and
metal
patterns
of
all
kinds*



Also Belt Driven



Burke 10" Bench Drill Motor Driven

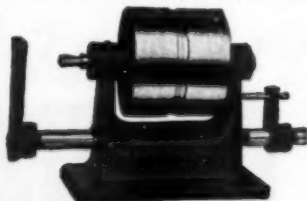
Extremely accurate, very sensitive and of *Burke Quality*. Has double flanged top cone mounted on large bearing through which spindle runs. Spindle thrust taken on a ball bearing.

Furnished with G. E. Motors, 110 or 220 v., d. c., or 110 or 220 v., a. c., 60 cycle, single phase.

The Burke Machine Tool Co., **Conneaut, Ohio**

Burke Tapping Machine

Another Tool of Burke Quality



Pin Clutch Drive
 $\frac{1}{4}$ " capacity, \$20.

Friction Drive
 $\frac{3}{8}$ " capacity, \$20.
 $\frac{1}{2}$ " " 35.
 $\frac{5}{8}$ " " 50.

BUILT throughout with exceptional care, our several sizes give service in proportion. Accurate, rapid and convenient, they give solid satisfaction.

Send for details today

The Burke Machine Tool Co., **Conneaut, Ohio**

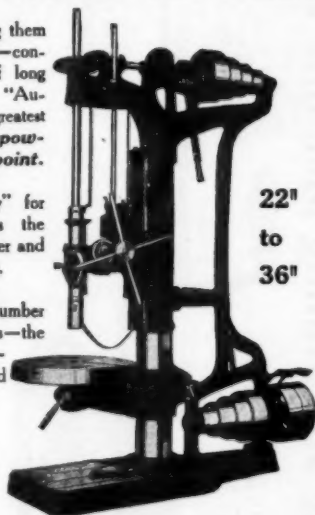
Experts Confirm Our Claims

Users—and among them are many experts—confirm our claim of long standing that the "Aurora" has the greatest pulling capacity, or *power at the drill point*.

The "reason why" for this superiority is the large pulley diameter and the ratio of gearing.

There are also a number of special features—the money saving kind—that you should know about.

For extraordinary drill value consult our Catalog



DRILLING TESTS OF 24" AND 26" DRILL

Size of Hole	Spindle Speed	Feed per Minute	MATERIAL
1"	360	9½"	Cast Iron
1"	360	6½"	Mild Steel
1½"	350	6½"	Mild Steel
1½"	350	9"	Cast Iron
1¾"	225	5½"	Mild Steel
2"	225	6½"	Cast Iron

The Aurora Tool Works
Aurora, Indiana, U. S. A.

Hoosier Drilling and Milling Machine Vises

Equally Adapted to Planers and Shapers



While these unusually handy and sturdy vises are especially designed for holding work on drilling and milling machines, they can be used to equal advantage on planers and shapers.

"Hoosiers" have a milled key slot running the entire length of the bottom of body. This allows perfect alignment on milling machine table. Flanges with bolt slots insure secure anchoring of the vise to the table.

NUMBER	WIDTH JAW	DEPTH JAW	JAWS OPEN	WEIGHT	SPACE REQUIRED
No. 1	5 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	3 $\frac{3}{4}$ "	45 lbs.	7 $\frac{1}{2}$ " x 14"
2	7 $\frac{1}{4}$ "	2 $\frac{1}{8}$ "	4 $\frac{1}{2}$ "	90 lbs.	9 $\frac{1}{4}$ " x 17 $\frac{1}{2}$ "
3	8 $\frac{3}{8}$ "	2 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "	175 lbs.	11 $\frac{1}{2}$ " x 23 $\frac{1}{2}$ "

We'll gladly answer questions. You won't forget if you write for details NOW.

HOOSIER DRILLING MACHINE CO.,

Goshen, Indiana



**It Pays to
Specialize**

**SPEED
12,000
R. P. M.**

**No Vibration
No Heating**

***Ask for full
Information***

**Our
No. 1/2**

Avey

**BALL BEARING
DRILLING Machine**

is specially designed for very
light drilling where speed is
the essential rather than power.

**Eliminates Twist Drill
Breakage**

because the drill cuts so fast that
feed pressure does not break it.

The Avey Drilling Machine Company
Cincinnati, Ohio

The "Supreme" Quick-Action Cam Vise A Vise That Is Really Supreme



Patented May 8, 1919

Here are 3 of its **10 Superior Features**:

It has a **larger range** than other vises of the same size.

It is **very durable**, having nothing to get out of order.

Work is gripped very securely, and is drawn down in the vise when clamped, instead of being raised up, as in screw vises.

Write for literature describing its "**10 Superior Features**"

SPAFFORD TOOL WORKS, - **Hartford, Conn.**

Export Department, 77 Broad St., New York City

DO You Use AIR?

**THE POWELL
AIR GUN VALVE**

"JUST PRESS"
THE BUTTON



BUY
POWELL
AIR GUNS
KEEP
CLEAN

CLEANS
WORK BENCHES
AND
MACHINE TOOLS
MADE IN SIZES
 $\frac{1}{8}$ " TO 1"

ORDER A SAMPLE
THE W. M. POWELL CO.
1200 DRAPER ST.
CINCINNATI, O.

Model "E-50" Sensitive Bench Drill Press

This 2-speed, direct motor drive, high-speed ball bearing drill is especially designed to care for all work, ranging from the smallest to a $\frac{1}{4}$ " hole.

Can be furnished with special pulleys to drive main spindle any speed up to 10,000 R. P. M.

Main spindle is heat treated and ground to size; it is guided through a quill with support at each end in an annular ball bearing.

End thrust is taken up by an end thrust ball bearing under feed arm.

A quick adjustable table has a working surface $5\frac{1}{2}$ " x 5", and will take work up to $4\frac{3}{8}$ " in height.

Surface of table is ground to insure accuracy.

Table has a self-cleaning taper, which keeps the precisely ground main column free from chips, and serves also as a guard to prevent injury to column.

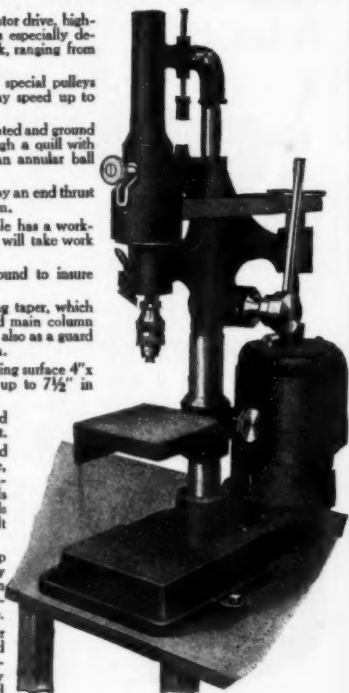
Base has a ground working surface 4" x 6", and will take work up to $7\frac{1}{2}$ " in height.

Base has oil groove and self-cleaning column support.

Your attention is called to another special feature, which is a spindle lock enabling quick changes of drills without the operator's hands coming in contact with belt or pulleys.

An idler pulley takes up any belt stretch which may occur in the endless woven canvas belt, without impairing sensitiveness of machine.

Front pulley and upper part of spindle are guarded by a semi-tubular guard insuring safety. Machine may be operated either by hand or foot control.



Height over all.....24"
Base..... $7\frac{1}{2}$ " x 18"
Diameter of spindle..... $\frac{7}{16}$ "

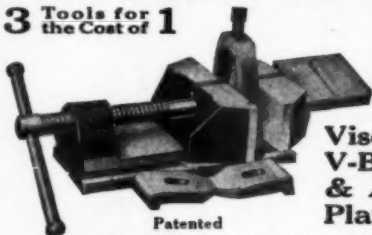
Spindle feed..... $2\frac{1}{4}$ "
Weight.....62 lbs.
Will drill to center of a 6" circle.

The High Speed Hammer Co., Inc.
Dept. 14
Rochester, N. Y.

G-S Combination Vise

3 Tools for 1
the Cost of 1

*Sent on
30 days'
trial*



Patented

**Vise
V-Blocks
& Angle
Plate**

Dimensions

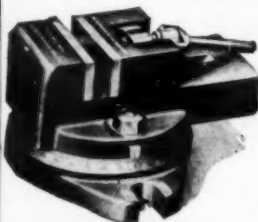
Jaws Open.....	No. 1, 5"	No. 2, 7"
Depth of Jaws.....	No. 1, 2 1/4"	No. 2, 3"
Width of Jaws.....	No. 1, 8"	No. 2, 9 1/4"
Jaws Overhang.....	No. 1, 1 1/4"	No. 2, 2"
Weight.....	No. 1, 75 lbs.	No. 2, 105 lbs.

GERMANOW-SIMON MACHINE WORKS

68 MILL St.
ROCHESTER, N. Y.

Write for literature

**CAN BE OPENED, CLOSED AND CLAMPED
IN AS MANY SECONDS**



This cat-quick vise with a grip like a bulldog is easily the best vise buy on the market today.

Precision-built and with extra capacity the

**Nestor
Vise**

stands supreme. Let us tell about the special, quick-sliding jaw in detail. Also made with square, flanged bottom, sides and ends.

The Vise With Virtue

Nestor Quick-Acting Drilling and Milling Vise. Four sizes, 2 1/2, 4, 6 and 9 inches.

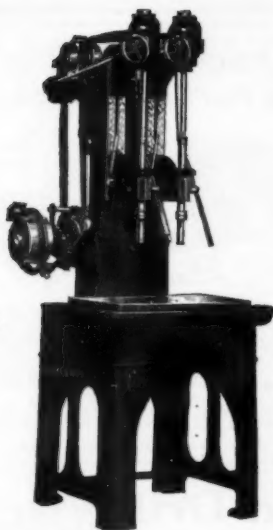
Immediate shipment

We have exceptional facilities for light manufacturing, jig, die, fixture, gauge and punch work. Let us know your requirements for quotations.

*Write TODAY for
description and prices*

Nestor Mfg. Co., Inc.

40 W. 13th St., New York City



**With
One
to
Eight
Spindle**

**For
¾-in.
Drills
and
Smaller**

Sensitive Drilling Revolutionized

**With Henry & Wright Drilling Machines
And our Special Feed and Speed Chart**

Henry & Wright Drilling Machines have a gearless power transmission with frictionless bearings, which delivers the most power at the drill point. In connection with our Special Feed and Speed Chart, they have fairly revolutionized sensitive drilling

Put us to the test. In what sizes are you interested?

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.

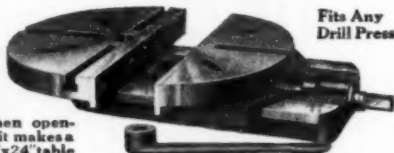
OVER-SEAS REPRESENTATIVE

ALMACSA **ALLIED MACHINERY COMPANY OF AMERICA** **ALMACSA**
120 BROADWAY, NEW YORK, U.S.A.

Principal Foreign Offices: Paris, Turin, Zurich, Barcelona

The Quickgrip Table Vise

A Drill Press Table and Vise Combined



Fits Any
Drill Press

When opened it makes a
16"x24" table

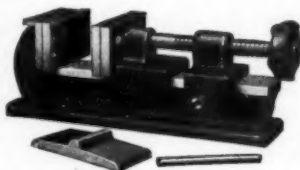
Swivels in socket the same as the regular table, and gives you a large, heavy vise right in the table itself. The practical mechanic will appreciate what this means in saving time, drills and material. Has interchangeable steel vise jaws; $1\frac{1}{4}$ " screw runs in bronze nut.

May we describe more fully and quote?

SPRAGUE-HAYES MANUFACTURING COMPANY

44 E. Larned St., Detroit, Mich.

Gem Drill Vise



Strong and Durable

Quick in Action

Powerful Grip

Made by

J. E. Martin Tool & Die Co.

548 West State Street,

Springfield, Ohio



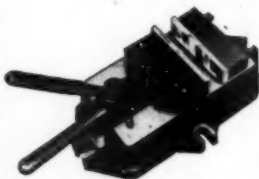
Have You Ever Noticed
How Few Second-Hand
Sipp Quick-Change-Speed Drills

are offered for sale? No one wants to part with them. We are ready, at any time, to pay a fair price for any Sipp Drill the owner wants to sell. We can use them, for we cannot keep up with orders for new ones.

The Sipp Machine Company
Keen Street, PATERSON, N. J.

Rugged, Rapid-Action Milling Vise

The "Hartford" is Built For Service



Width of jaw.....5 in.
Depth of jaw.....1 1/4"
Weight.....40 lbs.
Maximum opening with
false jaws removed...3 1/8"

This vise was built for the very hardest, most accurate service which the exigencies of war production demanded of it. Steel parts are made from drop

forgings, hardened and ground on all fitting surfaces. The base is made from special iron.

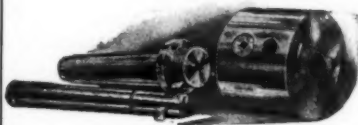
Actual shop results prove that this vise will outwear an ordinary vise at least 5 times.

For description of this vise of established merit, write to

The Hartford Special Machinery Co.
285 Homestead Ave., Hartford, Conn.

Flynn Drill & Micrometer Boring Head No. 12

A Boring Head With 1 1/4" Offset



Graduated in
1000's
Of An Inch

We had so many requests for a boring head with a large offset that we have decided to put on the market this new No. 12 with a 1 1/4" offset—larger than that of any other boring head made.

Head runs concentric and has no projections to interfere in reaching small places. Saves time, material and mistakes.

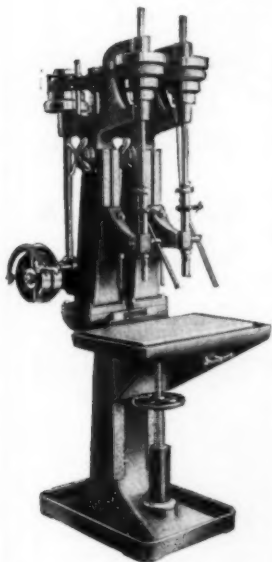
Used successfully in many Detroit factories. Write to—

J. M. WATERSTON,

78 Woodward Ave.
DETROIT, MICH.

Edlund Quick Change Sensitive Drilling Machine

With One to Six Spindles



A Few Features:

S K F Ball Bearings throughout. Ten ball bearings on each spindle.

Great rigidity is assured by using a one-piece casting for the upper frame, with all bearing surfaces extra large.

Unusual power results from the large diameter of drive and cone pulleys.

Spindle speeds of 510, 816, 1273 and 2038 r.p.m.—simply shift a handle a partial turn to change them.

A straight endless belt eliminates the objectionable quarter turn. Belt may be shifted from either side of machine.

This is only a small part of the story. Our illustrated folder describes fully the many advantages of this popular machine.

We have a copy for you; will you send for it?

Edlund Machinery Company, Inc.

250 Huntington Ave.,

Cortland, N. Y., U. S. A.

Star Vises

THAT efficient service over a long period is a recognized characteristic of Star Vises is shown by the steadily growing list of manufacturers who are adopting Star Vises as standard equipment.



Universal Swivel Toolmakers' Vise
Warranted

"Star"



Standard Machinists' Bench Vise
Warranted

Made in all Standard
Sizes and Types

Write for illustrated catalog

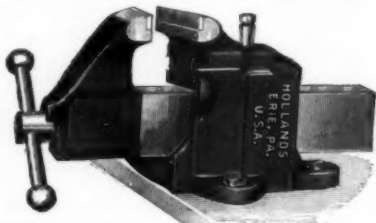
Fulton Machine & Vise Co.
Lowville, N. Y.

SOLE SALES AGENTS

**Boker Cutlery &
Hardware Co.**

101 Duane St., New York, N. Y.

HOLLANDS HARD-GRIPPING Machinists' Swivel Jaw Vises



Adjustable rear jaw is of special construction and as strong as a solid jaw. It holds taper objects of any angle without losing alignment with front jaw. *Complete Catalog upon request.*

HOLLANDS MFG. CO.,
Established 1887

Erie, Pa.

Yost Vises

The Favorites of Skilled Mechanics



Solid Jaw, Stationary

Yost Vises are made for every machine shop purpose. The four here shown are only a part of our complete line, as shown in the illustrated Catalog.



Solid Jaw, Swivel Base



Universal Double Swivel

The Yost Drill Press Vise replaces special and costly jig fixtures so often necessary in drill press operations. It has "Yost" quality and convenience.



Yost Drill Press Vise

Better have the Catalog on hand for reference

Yost Manufacturing Co.
Meadville, Pa.

Promotes Order—Saves Time

The Bench "with a place for everything"

A Ritchie-Wertz Modern Bench

does for the tool maker and bench hand what the kitchen cabinet does for the housewife. It saves so much time because there's a place provided for the tools, stock, blueprints, etc.



Well built, easy to clean.

Six drawers, a blueprint slide and three compartments for material. Leading manufacturers find them a source of real economy—they aid production. Write for full data and price.

THE RITCHIE-WERTZ CO., Dayton, Ohio



Hitchcock's List

Goes to the Heart of 96% of
the Best Plants in the Country

The above statement is the result of careful mail inquiries directed to thousands of the larger tool-using concerns.

Riveting Revolutionized

"The Hammer with the human stroke"

Heads Rivets Cold



Heads 'em tight or loose, flush, countersunk, or finishes heads any shape desired at the rate of:—

A rivet a second, sizes up to 3-16 in.

A rivet in two seconds, sizes 1-4 to 3-8 in.

A rivet in three seconds, sizes 7-16 to 5-8 in.

Built in Eight Sizes

To handle rivets from the smallest, up to 1½" in diameter. Send us sample assembly parts with rivets or sketch of your work, and let US shoulder your riveting problems.

Send for the High Speed Hammer Book

Department 13

The High Speed Hammer Co., Inc.

Rochester, New York

Weigel Double-Wheel "Trukaster"

Has heavy plates and axles.
Easiest running, strongest and
most durable double-wheel
caster made. Lasts three times
as long as others.

"Kwality Kaster"

(See Illustration)

The strongest and most dura-
ble single caster. Won't crush
or break. Swivels on steel
machined rollers.

Write for Price List

**THE HAMILTON
CASTER & MFG. CO.
HAMILTON, OHIO**



Tung - Stel - Bath

A quenching medium for hardening Tungsten or High Speed steels composed of scientifically prepared chemicals in powdered form.

This powder when placed in an iron pot and heated will melt at a very low temperature.

High Speed steel may be heated to the maximum temperatures and quenched in Tung-Stel-Bath, primarily heated to a temperature as high as eleven hundred degrees Fahr.

ADVANTAGES ATTAINED BY THE USE OF TUNG-STEL-BATH:-

Maximum hardness and toughness.

Eliminates the necessity of drawing the temper in a great many instances.

Obviates the necessity of sand blasting entirely.

Prevents cracks due to hardening strains.

No more oxidization.

No more oil carbon deposit.

Tools quenched in Tung-Stel-Bath are as clean after hardening as they were before being placed in the fire.

Write today for full information.

**Bennett Metal Treating Company
Elmwood, Connecticut**



Carbonizes All Steels

Economically and Safely

To use "Ferro Case" once means you will say good-by to cyanide forever. The reason? Greater safety and economy, and a better, cleaner case. It carbonizes at a lower temperature, thereby avoiding coarse crystalization, blistering, warping and wear of furnace linings and crucibles.

A Non-Poisonous Compound

scientifically prepared, which does not lose its effectiveness with age or chemical action, and can therefore be stocked without danger of spoiling.

Ferro Case M is for use in the cyanide melting furnace, and is handled the same way.

Ferro Case S is for sprinkling on hot steel. In either case you get better results in absolute safety.

*We solicit a trial order from you
Kindly specify the grade wanted*

C. G. Buchanan Chemical Co.

Sta. H., Cincinnati, Ohio, U. S. A.

Case-Hardo

The Modern Case Hardening Compound

In using Case-Hardo you do not experiment. Four years of use on various products in all parts of the country has demonstrated its unquestionable reliability and great economy.

You Will Find

- that it hardens quicker, cleaner and deeper than other agents.
- that it does away with poisonous fumes; the operator can work in safety.
- that it is used as other agents, but at much lower heat.

Full information and prices on request

Made Only By

The Thos. Buchanan Company

29 W. 3rd St.,

Cincinnati, Ohio

Established in 1886



SCLEROSCOPE

The Standard Instrument
For Measuring the

HARDNESS of METALS

Can Ship from Chicago Stock

CASEITE

(for CYANIDE)

CASE HARDENING

Every Material for Steel Treating

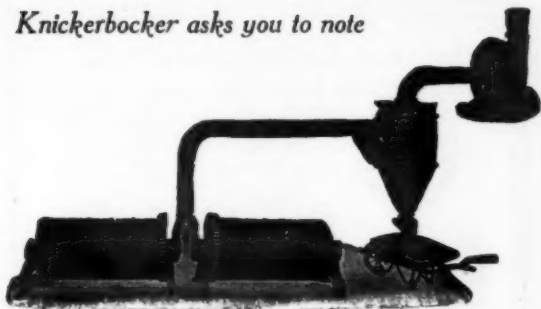
Write for Catalogue

BELL & GOSSETT CO.

630 W. 30th St.,

Chicago

Knickerbocker asks you to note



Who ---- And How Many "Rarefieds" They Use

Solvay Process Co.....	26
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.....	21
Western Electric Co., Chicago.....	12
Weston-Mott Co., Flint, Mich.....	12
Willis-Overland Co., Toledo, Ohio.....	10
Oliver Chilled Plow Works, South Bend, Ind.....	9
Pittsburgh Plate Glass Co., Pittsburgh, Pa.....	9
Crane Co., Chicago.....	7
General Electric Co., Schenectady, N. Y.....	7

PERHAPS they first read our Booklet and decided to try one, anyway. The performance of that one was an eye-opener—and they reordered of course.

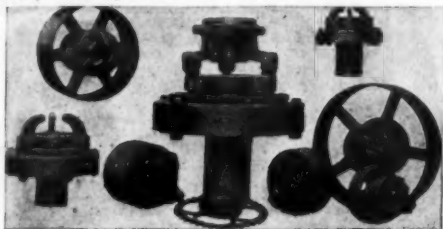
When you realize the exceptional efficiency of the "Rarefied" and the saving in power and repairs it assures you, you will not hesitate to send us your order.



To help you understand the merits of this modern dust collector we would like to send you a copy of that Booklet. Let's have your address

The Knickerbocker Co.
Jackson, Mich.

**Refer your clutch problems to us
Solving them is our business**

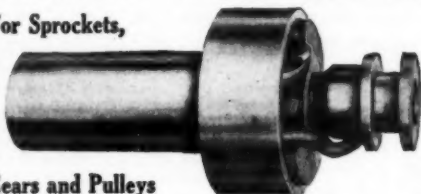


*Special Clutches — a specialty
Catalogue cheerfully sent on request.*

National Clutch Company
1859 Fulton St., Chicago, Ill.

CONWAY EXPANSION SLEEVE CLUTCH

For Sprockets,



Gears and Pulleys

This cut gives an example of the neat and suitable application of the Expansion Clutch. It is furnished with sleeves of any length and diameter with head to fit the clutch required. The sleeve is very convenient for building up a cone pulley or for using sprocket and gear wheels.

All Conway Clutches are good. There is one to fit your needs. Write for our interesting Clutch Catalog.

CONWAY & COMPANY, STOCK YARDS P. O. CINCINNATI, O.

Redface Pulleys

Sheaves and Fly Wheels



PERMANENT: They are permanent, as they are not affected by age, heat, cold or moisture.

RELIABLE: They do not loosen up under vibration or intermittent loading.

RUN TRUE: They run true, steady the line shaft, and have a very small load due to windage.

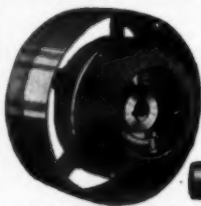
REDFACE PULLEYS are especially adapted to use on motors, fans, pumps and special machinery.

Catalog mailed promptly upon request

Pyott Foundry Co.

Cast Iron Pulleys, Sheaves and Fly Wheels
328 N. Sangamon St., Chicago, Ill.

"Glad To Recommend Edgemonts— As Simple and Efficient Clutches as We Ever Saw"



Enclosed Type, Self-Oiling



Thus are our clutches described by one concern that has had considerable experience with them. We will gladly send testimonials of leading manufacturers who are enthusiastic endorsers of

"Edgemont" Friction Clutches

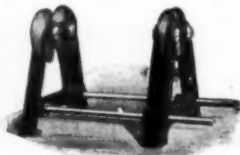
They stand the strain of being thrown in and out constantly, and will pull all that a belt will at any speed.

There's an Edgemont Clutch for every purpose. Write for Catalog.

The Edgemont Machine Co.
Dayton, Ohio

Special Clutches and Transmission Machinery for all purposes.

Improved Anderson Balancing Way Automatically Adjusts Itself



Has no Superior for Balancing Cutter Heads, Crank Shafts, Aeroplane Motors, Propellers, Polishing Wheels, Cones, Pulleys, Gin Brushes, Armatures, Rotars for Turbines, etc., etc.

Perfectly balanced. Always ready. Rotation Discs run in chilled iron, ground true on face. They run in specially designed ball-bearings and are extremely sensitive. Five sizes, for parts up to 10,000 lbs., cover all requirements.

A big aid to the practical mechanic. Write for details

Anderson Bros. Mfg. Co.
115 Morgan St., Rockford, Ill.

Tucker's Safety First

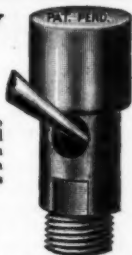
Oil Hole Covers

Require but one hand to pump in the oil. Adapted to all kinds of mechanism having oil holes leading to a bearing, and locate the parts to be lubricated.

*Send for Catalogue
Oil Hole Covers No. 5*



Style G, Closed



Style G, Open

Style E



Style C



Style F, Drive



Style A



Style D, Open



Style D, Closed



Rotary Head

W.C. & F.C. TUCKER, Hartford, Conn.

Limited by Operator's Speed

The over-size or under-size of any piece is shown instantly with the Universal Amplifying Gauge. It not only enables you to dispense with 75% of your snap gauges, but the work is put through with much greater facility—in fact, as fast as your speediest workman can handle the pieces. Easily and quickly adjusted.

Used by the Government, is popular in big auto plants, and is especially valuable where the Swedish gauge system is used.

Complete details in Catalog No. 100

THE NORTH SIDE TOOL CO., Dayton, Ohio

Manufacturers of Special Tools, Dies, Jigs and Fixtures



For inspection work where limits are close and accuracy and speed essential

1. Measuring Plug Gauges in readings of .0001
2. Measuring Interchangeable Parts in readings of .0001
3. Measuring Drill Jig Bushings in readings of .0001
4. Measuring Pistons in readings of .0001
5. Measuring Ball or Roller Bearings in readings of .0001
6. Testing Concentricity of Form Milling Cutters .0001
7. Testing Concentricity of Spindles of various designs .0001
8. Settling Shop Disputes over Micrometer Readings
9. Speeding up Production Gauging

Any attachments to suit your needs

The Davie is Standard Throughout America and Europe

22 in use in The Ford Motor Plant Alone

Send for catalog

Davie Gauging Machine.

Graduations in .0001

Height 17"—Length 15"—Width 9"

BURTON, GRIFFITHS & CO., Ltd.
Ludgate Sq., Ludgate Hill, London, E.C.

Agents for Great Britain

SOC. ANONIMA ITALIANA ALFRED HERBERT, Milan, Italy. Agents for Italy

The Davie Tool Co.

E. 118th & Euclid Ave., Cleveland, O.

SOC. ANONYME ALFRED HERBERT
47 Boulevard de Magenta, Paris

Agents for France

Mary says it's easy—

No trick at all, declares the young lady, to gauge the work quickly and accurately—and the “come-backs” truly have been practically nil



**Proven a big success
in big auto plants**

The American Amplifying Gauge acts like oil on the troubled waters of the inspection department. Snap gauges are costly and quickly wear away, while those of the adjustable type require a thoroughly skilled hand to keep them reliable. The “American” is always ready and reliable. Used with a set of master gauges or models, it makes an ideal measuring system.

Automobile plants use them for measuring pistons and piston pins, thickness of piston rings, valve stems and similar parts.

*Let us send you full data about the “American”
and its operation in connection with the “Limit System”*

American Gauge Company
Dayton, Ohio

CULLMAN SPROCKETS

STOCK AND TO ORDER



Diamond, Whitney, Baldwin, Duckworth and
Coventry Chains, Block, Roller and
High Speed Silent types on hand



CATALOG

CULLMAN WHEEL CO.,
1359 ALTGELD STREET

CHICAGO



Terrell's Steel Lockers Are Fireproof, Sanitary, Secure

STEEL LOCKERS are a necessary equipment in all buildings where persons require individual receptacles for storing garments or sundry articles.

Fireproof lockers greatly lessen the fire-hazard of your plant. In some states they are required by law.

Sanitary lockers are steel lockers. Wooden lockers are easily accessible to various kinds of vermin.

Secure lockers breed contentment among the workmen, for they know their belongings are safe against meddlers and thieves. Terrell's Steel Lockers are unexcelled for strength, durability, and economy.

Write today. You'll obligate us—not yourselves

Terrell's Equipment Company

Hall & Division Sts., Grand Rapids, Mich.



THRUST BEARINGS

FLAT OR GROOVED RACES

from 1/2" SHAFT DIA., UP

ONE OR ONE THOUSAND

THE GWILLIAM COMPANY

253 WEST 58th ST., NEW YORK

MORSE SILENT CHAIN DRIVES



For all transmission purposes, from the tiniest to the mightiest. Flexible as a belt, positive as gears, longer life than either. Ask for the surprising "Chain of Evidence."

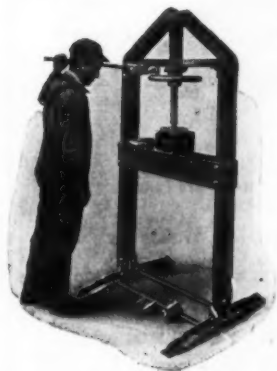


Morse Chain Co.
Ithaca, N. Y.

*Morse Engineering Service
Assistance Free*



Thousands Of
WEAVER FORCING PRESSES



Are Serving
Garages
Electric Shops
Machine Shops
Factories
and
Many Other
Industries

Because of the
wide range of appli-
cation, great depth adjustment, ease in handling
bulky work, greater satisfaction in small work,

**Quick Release Feature and
the Enormous Leverage**

which enables the mechanic or workman to
exert a maximum pressure of more than 20 tons
without calling assistance.

For complete description and prices,
write for Catalog "E"

Weaver Manufacturing Co.
2179 So. 9th Street, Springfield, Illinois

Giant Universal Joints

$\frac{1}{2}$, $\frac{3}{4}$, 1 , $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2 , $2\frac{1}{2}$ in.



**Self Oiling
Dirt Proof**

**For
Heavy
Service**

**to an
Angle
of 45
Degrees**

Wearing contacts are of hardened steel and large diameters. They give perfect service, without play or looseness, up to an angle of 45 degrees. We make the Vanderbeek Universal Ball Joints for higher angle drives. Put your angular driving problems up to us.

Ainslie Machine & Tool Works

Successors to Vanderbeek Tool Works
HARTFORD, CONN.

**Sure, costs are going up and up
But you can reduce BUFFING COSTS**



**The
Abbott
Burnishing
Barrel**

75 to 99 Per Cent

This is a remarkable and most pleasing reduction in these days of mounting costs, isn't it?

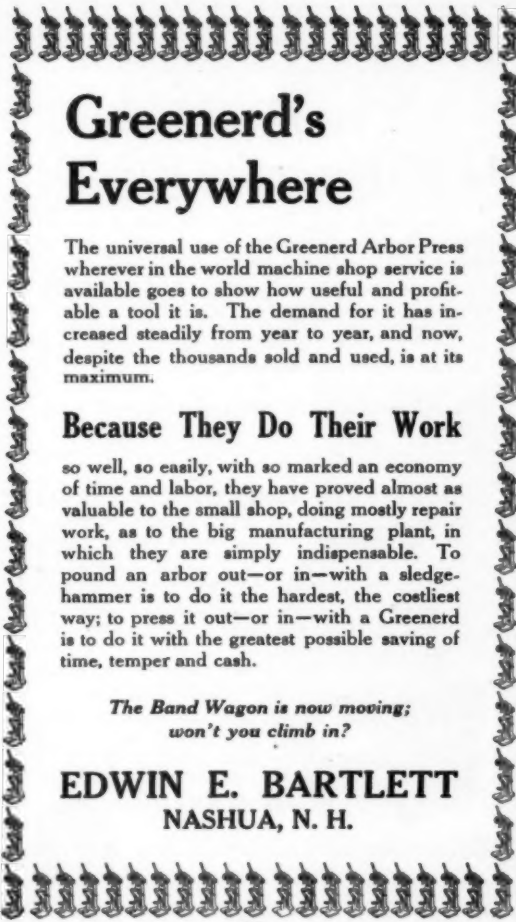
The Abbott Burnishing Barrel

burnishes by the bushel, which of course is cheaper than buffing one piece at a time. And it is a further surprising and agreeable fact that the work is also BETTER.

*All sizes of burnishing balls and soap chips for immediate shipment
Write for booklet and send samples for burnishing*

The Abbott Ball Company

Elmwood District, Hartford, Conn.



Greenerd's Everywhere

The universal use of the Greenerd Arbor Press wherever in the world machine shop service is available goes to show how useful and profitable a tool it is. The demand for it has increased steadily from year to year, and now, despite the thousands sold and used, is at its maximum.

Because They Do Their Work

so well, so easily, with so marked an economy of time and labor, they have proved almost as valuable to the small shop, doing mostly repair work, as to the big manufacturing plant, in which they are simply indispensable. To pound an arbor out—or in—with a sledgehammer is to do it the hardest, the costliest way; to press it out—or in—with a Greenerd is to do it with the greatest possible saving of time, temper and cash.

*The Band Wagon is now moving;
won't you climb in?*

EDWIN E. BARTLETT
NASHUA, N. H.

ELECTRIC EUCLID HOISTS

Let OUR Engineers Save YOUR Time

It is possible that you realize the need of modern material handling equipment but cannot spare the time or men to work out the details.

Our engineers are constantly solving these difficulties and helping manufacturers reduce expenses.

Furthermore, this service is absolutely free.

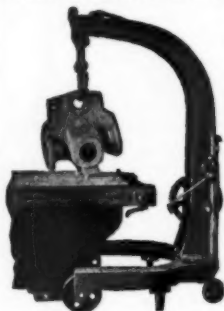
Will you take advantage of it?

The Euclid Crane & Hoist Co.

Dept. C

EUCLID, OHIO, U. S. A.

The H. C. of Lugging by Hand



When a high-priced machinist in your shop has a job too heavy for him to lift or lug by hand, does he waste several minutes trying to solve his problem and then finally find it necessary to call other high-priced men to assist him? This means waste of time and strength as well as idle machines.

THE CANTON PORTABLE CRANE AND HOIST

enables one man to lift and lug quickly and easily any weight up to 4000 lbs. Even if you have overhead equipment, the "Canton" will be found an indispensable auxiliary.

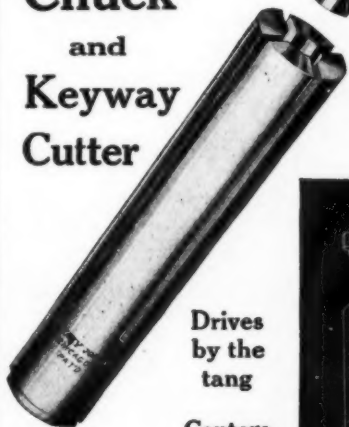
Many sizes. Write
for Booklet E-8

Canton Foundry & Machine Co.
Canton, Ohio

Permanent Exhibit Salesroom, Grand Central Palace, New York

HYATT
ROLLER
BEARINGS
USED

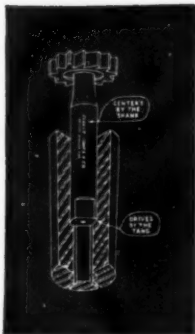
"Wear-Ever" **Woodruff** **Chuck** and **Keyway** **Cutter**



Let us supply you with the Cutters. No extra charge for the tang.

**Drives
by the
tang**

**Centers
by the
shank**



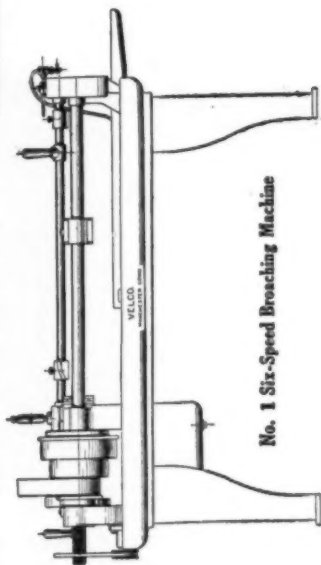
Insures a positive drive and true-running cutter. Eliminates the making of collet chucks. Fits all standard makes of milling machines, and is made in all tapers such as Brown & Sharpe and Jarno tapers.

How about a trial order? It will delight you.

Scully - Jones & Company
 Suite 555 Railway Exchange Bldg., Chicago, Ill.

The Fastest and Best Way to do KEYWAYS or BROACHING is

The VELCO Way



No. 1 Six-Speed Broaching Machine

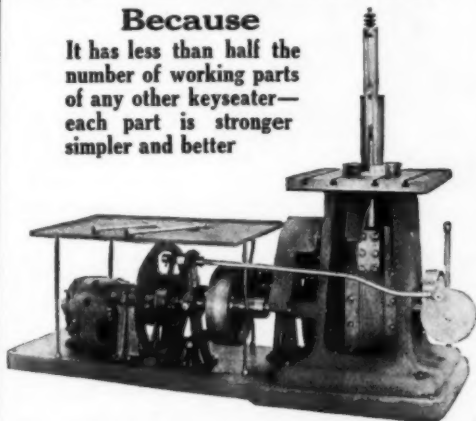
THE V. E. LA POINTE MFG. CO., Hilliard St., MANCHESTER, CONN.

The Catlin Keyseater

In Economical, Simple and Rugged
Without Being Excessively Heavy

Because

It has less than half the
number of working parts
of any other keyseater—
each part is stronger
simpler and better



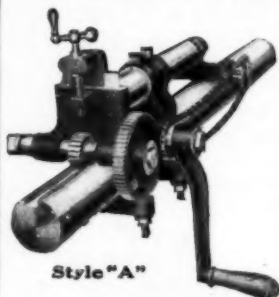
THE "CATLIN" is a most economical machine. Working parts are simple and inexpensive to replace. The machine is so rugged that it will last a long time without repair.

In regard to speed. This machine in ordinary shop practice, when there was no attempt to establish a record, cut the following: in 20 minutes, keyseats $2\frac{1}{2}$ in. long, $\frac{1}{2}$ in. wide and $\frac{1}{4}$ in. deep, in 20 mitre gears of 8 in. diameter; in 3 minutes, a keyseat 6 in. long, 1 in. wide and $\frac{7}{8}$ in. deep in a cast-steel hub. It will cut any number of keyseats to even better than 1000ths of an inch. Built in sizes for all classes of work.

Better get our interesting, large, illustrated folder

Chattanooga Machinery Company
Chattanooga, Tenn.

The Bucher-Smith Keyseater



Style "A"

**BUCHER SMITH
BETTER SERVICE**

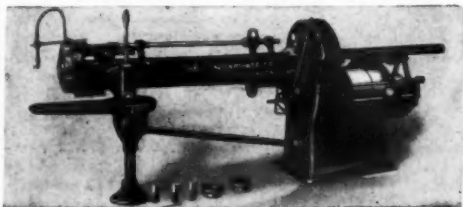
This strong, durable and efficient Portable Keyseater is easy to operate and works in close quarters.

Cuts accurate keyways in shafts from 1¼" to 5" and ¼" to 1¼" wide, 12" long, without resetting.

Write for Catalog and prices of our hand-power and electric Portable Keyseaters

THE BUCHER-SMITH CO.
East Liverpool, Ohio

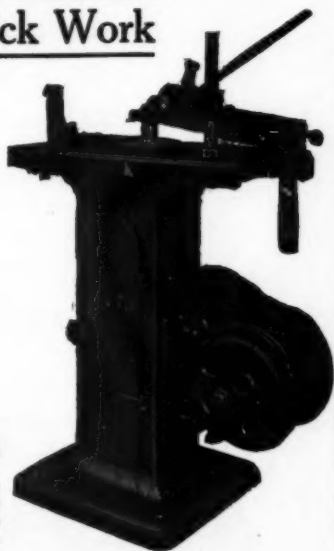
This is only one of the
11 TYPES — 5 SIZES
Ask for a complete catalog



J.N. LAPOINTE CO.
NEW LONDON, CONN.

Makers of Broaching Machines and Broaches.

Modern Methods for Quick Work



A DAVIS KEYSEATER

Motor driven,
will save you
valuable space
as well as in-
crease your pro-
duction. It is
an investment
you can't afford
to overlook.

Write for Circular

DAVIS MACHINE TOOL CO., Inc.
ROCHESTER, N. Y., U. S. A.

Mills Keyseats

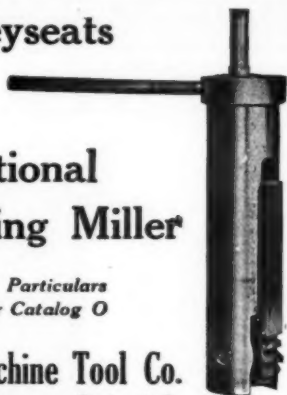
in one cut

The National Keyseating Miller

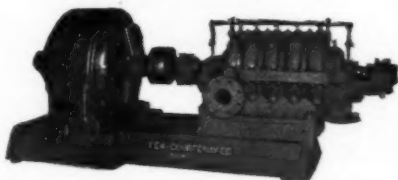
*For Full Particulars
Write for Catalog O*

National Machine Tool Co.

2266 Spring Grove Ave., Cincinnati, O.



Lea-Courtenay Centrifugal Pumps —for boiler feeding



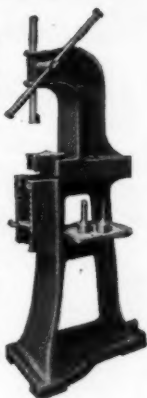
The Lea-Courtenay single-suction uniflow pump is used largely for boiler-feed service, and is one of the highest class of pumps built by this Company. It is built in sizes from 3-inch to 10-inch and up to 5 stages. The peculiar feature about this type of pump is that it has a volute at each and every stage. It has no diffusion vanes but is fitted with an hydraulic balancing device and produces an extremely flat efficiency curve.

LEA-COURTENAY COMPANY, 10 Maine St., NEWARK, N. J.

MAKERS OF CENTRIFUGAL PUMPING MACHINERY

The Nicholson Arbor Press is a time and labor saver

One superintendent told us "Every man in our shop uses that Nicholson Press." Besides pressing out arbors, it's valuable for punching, bending, broaching and similar work.



NICHOLSON Expanding Mandrels



are essential in every well-equipped machine shop. They instantly fit any hole, round or square, from $\frac{1}{2}$ " to 7". They save the time lost in calipering solid mandrels or turning them down to size.

We will send press or mandrels or both on a make-good-or-no-sale trial. Let us send our books describing these Nicholson specialties.

W. H. Nicholson & Co.
117 Oregon St., Wilkes-Barre, Pa.

AGENCIES:

BURTON, GRIFFITH & CO., Ltd.
Ludgate Square, London, E. C.

BURTON FILS
68 Rue des Marais
Paris, France

MONTI & OSCURO
Milano, Italy

ANDREWS-GEORGE CO.
16 Takegawa-cho, Kiobashi-ku
Tokyo, Japan

"Handiest Racks" at \$9 Saving



If you act quick!

Save Nine Dollars per set of three by ordering on approval at once.

Until the present supply is exhausted, you can get them at less than the factory cost on the next lot.

Everyone who handles bar stock should have one or more of the "Handiest Racks." And the saving of \$9 is worth attention NOW.

*Better write
TODAY*

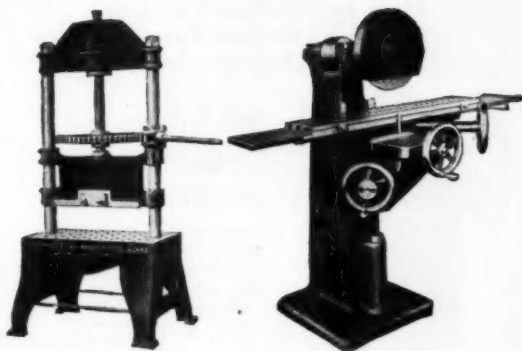
Wm. S. Yohe Supply Co.

503 Mahoning Road, N. E., Canton, Ohio

Machine Tool Makers

should investigate carefully the facilities offered by **Hitchcock's Machine Tool List** for reaching this trade in all parts of the country. Its circulation is specialized to completely cover *every line of manufacture* in which machine tools are used—as well as all railroad and other tool-using shops—with a thoroughness and effectiveness not equalled by any other advertising medium.

Get the "Manhattan" Habit



Two Machines of Outstanding Superiority

Manhattan Die Makers' Screw Press, Type B

Something new. A strictly one-man machine which is *guaranteed up to 80,000 lbs. pressure*. Gives perfect alignment to punch and die. Eliminates tendency to gouge or nick. *Much better and easier to handle* than a punch press that costs ten times as much. Saves time and labor and insures perfect results.

Manhattan Massive, Quiet Surface Grinder

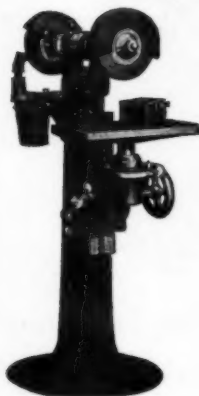
We have made every provision necessary to make this machine both massive and rigid, and yet compact. It has many detailed improvements and special features of its own. It is truly a "revelation in quiet efficiency." Fractions of 1000ths of an inch obtainable on both feeds. A money saver—a money earner.

Let us tell you about one or both of these great machines

Manhattan Machine & Tool Works
Dept. A., Grand Rapids, Mich.

La Salle Grinders

Plain and Surface Grinders
Automatic Surface Grinders
American Drill Grinders



No. 1 Plain and Surface Grinder (Micrometer Adjustment)

Grinding wheels.....8"x1"
Between wheels.....15"
Height to spindle center.....40"
Table surface.....8"x14"

Has vertical travel of 12" on
guides, $\frac{3}{4}$ " by micrometer,
and may be raised to within
2" of spindle center. Wheel
grinds to center of a surface
9" wide.

Spindle speed.....3,000 r.p.m.
Countershaft speed.....1,000 r.p.m.
Floor space.....18"x24"
Net weight.....300 lbs.

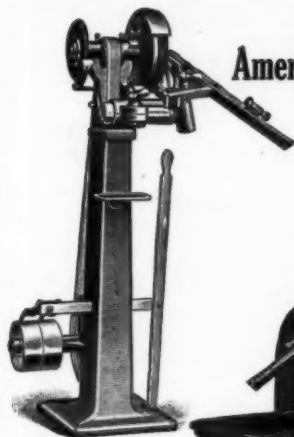
Our No. 1 Plain and Surface Grinder, shown in above cut, is a strictly modern tool for general use in shop and tool room. It is proving highly efficient in practical use and is a good example of "La Salle" construction.

The knee is brought to desired position by the hand-wheel, which turns a pinion in the rack and is clamped solidly in place by hand-nut at left. Table is carried by a stiff post, which moves vertically in the knee and is kept from turning horizontally by a feather. The horizontal hand-wheel, which carries a large graduated dial, encircles the post, and engaging it by a screw thread, provides a fine adjustment for depth of cut.

Write for circulars and close prices

La Salle Tool Company
La Salle, Illinois, U. S. A.

La Salle Grinders



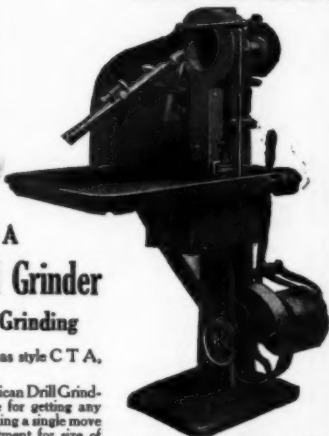
Style C T A

American Drill Grinder

For Dry Grinding Only

Unexcelled as a dry grinder for twist drills from $\frac{1}{8}$ " to $2\frac{1}{4}$ " diameter. Extra large drill holder has capacity from 1" to $3\frac{1}{2}$ ".

Style B T A is a similar machine with overhead countershaft.



Style W T A

American Drill Grinder

For Wet or Dry Grinding

Has the same drill capacity as style C T A, shown above.

A handy feature on all American Drill Grinders is the Caliper Jaw device for getting any desired clearance without making a single move other than for regular adjustment for size of drill. Write for complete specifications, which outline their splendid design in detail.

American Drill Grinders are furnished wet or dry, motor driven, with self-contained countershaft or with overhead countershaft, as fully described in our literature.

La Salle Tool Company

La Salle, Illinois, U. S. A.

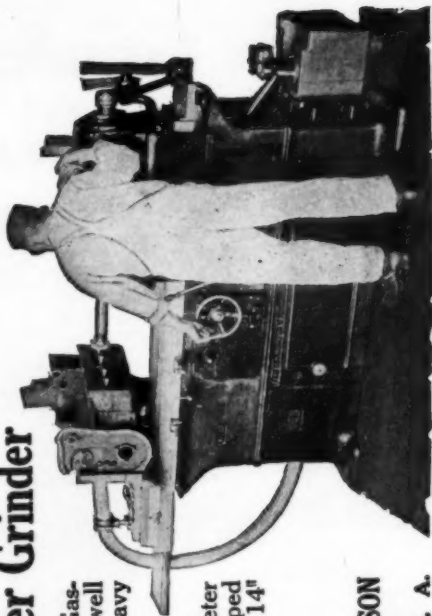
Whitney Cylinder Grinder

For grinding all kinds of Gasoline Engine Cylinders as well as work too large or too heavy to revolve.

Machines furnished to grind holes from 3" up to 7" diameter and 14" deep. Also equipped to grind holes as large as 14" diameter and 20" deep.

Write for new catalog

BAXTER D. WHITNEY & SON
Incorporated
WINCHENDON, MASS., U. S. A.



W & M No. 1 Universal Grinder



A Perfect Tool Room Machine.

Centers swing 10" diameter 30" long.

Circular on request

Wilmarth & Morman Co.

Master Grinder Makers

1185 Monroe Ave., N. W., Grand Rapids, Mich., U. S. A.

A Portable Gear Cutter Grinder

With Self-Contained Motor

The "Fenn"

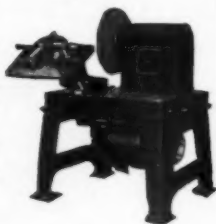
Handles gear cutters and various formed milling cutters having either $\frac{3}{4}$, $\frac{1}{2}$, 1, 1-1/16, 1 1/8 or 1 1/4" holes.

Can be easily carried to any part of the shop and quickly attached to any 110 v. lamp socket.

Requires little time for set-up. In 30 seconds it can be changed from grinding a 40 pitch to a 3 pitch cutter.

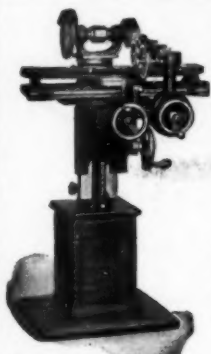
A high-grade economy tool.

Particulars and Prices?



The Fenn Manufacturing Company
Hartford, Conn.

Cable Address "Fenn"—Western Union Code



A Safe Grinder For You

STERLING

UNIVERSAL TOOL GRINDER

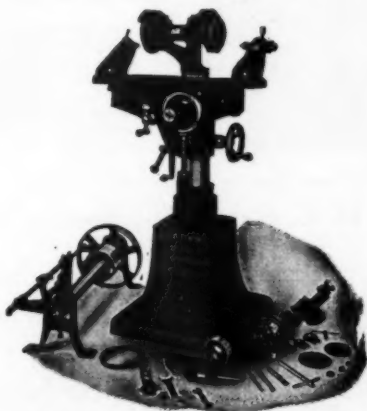
Has guards for the grinding wheels to protect the operator in case of bursting wheels. The "Sterling" has a very flexible power feed, which gives a variety of uses not obtainable with other power feeds. *A rapid, rugged and accurate machine.*

Write for "Sterling" Catalog

MCDONOUGH MFG. COMPANY, Machine Tool
Eau Claire, Wisconsin Department

Grand Rapids No. 1

Universal Cutter, Reamer
and Tool Grinder



Simple in Design
Efficient in Service
Accurate in Workmanship
Economical in Cost

Ask for bulletin giving full particulars

Grand Rapids Grinding Machine Co.

17 Ottawa Ave., N. W.

Grand Rapids, Michigan, U. S. A.

One Man Operates Several Of These

Harris No. 815 Automatic Hob Grinders

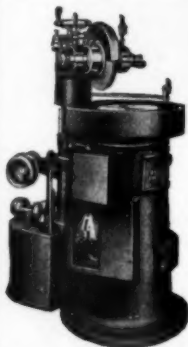


Because of the automatic action of these machines, one man can keep several in operation or he can operate one in connection with his regular work.

An inexperienced workman with one of these grinders can do the most difficult work. Although specially adapted for grinding hobs and form cutters, Harris No. 815's also do with equal satisfaction many other grinding jobs. Grinding is done on both forward and return stroke of table.

We'll gladly answer questions. Ask for Catalog H. K.

The H. E. Harris Engineering Co.
Bridgeport, Connecticut



Accurate Grinding of Plane or Curved Surfaces

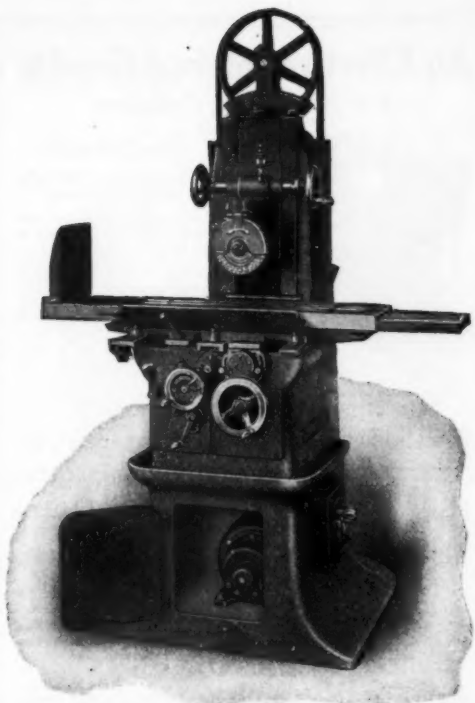
To within .00025" of manufacturing accuracy with the

Bristol

12-inch Rotary Surface Grinder. There is nothing better for grinding flat, concave or convex surfaces to the closest accuracy.

Full particulars?

Bristol Machine Tool Co., Bristol, Conn.
Successors to The C. G. Garrigus Machine Co.



It's 50% Heavier

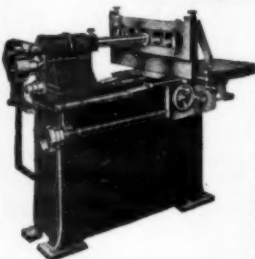
The Abrasive Tool Room Surface Grinder

It is 50 per cent heavier than any other machine of its type, to permit of the greater grinding capacity that is built into it. The specifications tell the story. May we send them?

Abrasive Machine Tool Co.

East Providence, R. I.

An Effective Internal Grinder For All Engine Cylinders



The Schmidt

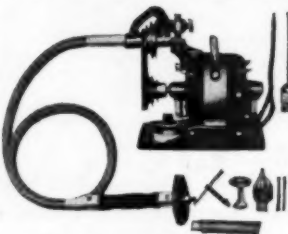
**Is Accurate, Simple
and Compact**

It will regrind tractor, truck and automobile engine cylinders so that they are as accurate as new, and do it so rapidly and economically that it makes a highly profitable machine for any factory or shop. It has ball bearings at pulley end of emery wheel spindle and both ends of rocker arm pulley shaft, and is built throughout for hard service. We can make prompt delivery.

Let us send details and Efficiency Records

B. L. Schmidt Co., Dept. A 8, Davenport, Ia.

Grind Down Production Costs With "Strand" Flexible Grinding Equipments



'Strand' Grinding Equipments

consist of motor with base and switch, countershaft, flexible shaft and spindle. A table is included if desired. Type M-5 is furnished with Ball Bearing Handle.

They are unexcelled for external & internal grinding of dies in lathe and shaper, sharpening punches in press without disturbing setting, grinding heavy castings and fins on gears and pulleys, etc.

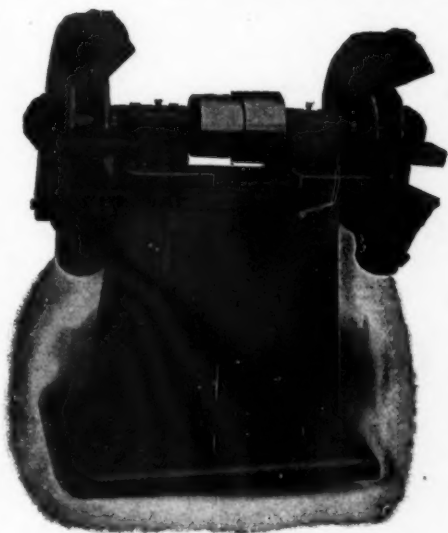
Cut shows type M-5 Grinding Equipment

We make many other types

Write for our Circulars

N. A. STRAND & CO., 549 Washington Blvd.
Dept. H, CHICAGO

Grind it *on a* **"Blount"**



No. 6½

Our eight sizes meet all requirements of general grinding work. The large bearings insure accurate work under continuous heavy load.

J. G. BLOUNT CO., Everett, Mass.

Brush Finish to Auto Bodies!

A Better Finish in Less Time



*Over
20,000
outfits
in use*

*Over
200 in
one plant
alone*

STOW FLEXIBLE SHAFT NO. 4, with $\frac{1}{2}$ h. p. motor, driving a 6" wire brush on a sheet aluminum auto body, conditioning it for painting. Also grinds, reams and drills. *Order early!*

STOW FLEXIBLE SHAFT CO., ^{26th &} Callowhill Sts., Philadelphia, Pa.

Ott Grinders

Combine the essentials of
ACCURACY and **RIGIDITY**
with **SIMPLICITY** of design

Simplicity accounts for their price, and for
their popularity among good operators.

5"x18" Plain—10"x32" Universal—6"x6" Internal

Ott Grinder Company
200 West Tenth St., Indianapolis, Ind.

Take the Drill
Press to the Work.

MEMBER OF
THE
NATIONAL
ASSOCIATION
OF
ELECTRIC
TOOL
MAKERS
NEW YORK, U.S.A.

"Van Dorn"

**PORTABLE
DRILLS &
GRINDERS**

THE VAN DORN ELECTRIC TOOL CO.
CLEVELAND, OHIO, U. S. A.

Setting Gauges Herlth Adjustable Parallels



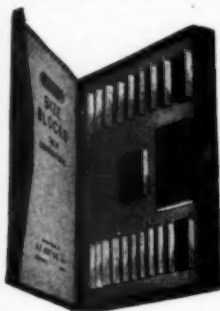
They save time, which
means money—

Specially Treated Steel
Accurate to .0001.

Let us tell you about them.
Better still, let us send a set
on approval, advising us
the service use required.

O. B. Herlth Mfg. Co.

32 Union Place
Hartford, Conn.



Manufacturers—

You need not take the risk of send-
ing your expensive master gauges out-
side of the inspection departments.



Size Blocks

are made within the closest practical
working limits and are so inexpensive
that you may freely check them out
to workmen as you do your twist drills,
reamers, etc. "Once a user always a
user." A table shows at a glance
how to secure any dimension.

Four sets, including one in the metric scale. Write for Circulars

A. F. WAY CO., Inc., Hartford, Conn.

Export Department, 77 Broad St., New York City

Makers of "LOWAY" Sine Bar and Sine Square

End View

OF A

Badger Grinder



Compare this view with the ordinary type of disc grinder construction. It does not take much of a mechanic to immediately see the increased stability of the Badger Grinder.

Instead of an unsupported rockershaft permitting destructive vibration, the Badger Grinder is designed with the rockershaft positively located in a rigid saddle carried on an extremely stiff and well ribbed boxed knee. There is no such thing as a "springy" rockershaft in the Badger Grinder. All other essentials on these machines are designed with proportionate strength. The result is increased accuracy on a real production basis.

The Badger Grinder is not an experiment. If you want to learn how much faster or closer to requirements this machine will produce your work you have only to send us a few of your unfinished parts for a free demonstration. We guarantee to give you authentic data on the disc grinder method of finishing your parts at a speed and tolerance which was never before considered possible.

We have a complete line of grinding discs, cylinder wheels, soft metal wax, and disc wheel cement

Badger Tool Company

E. B. Gardner, Pres.

R. D. Gardner, Treas.

Beloit, Wisconsin, U. S. A.

Representatives in all principal cities and foreign countries



DUMORE No. 1 GRINDER

THE Wood Turret Machine Company of Brazil, Indiana, uses the DUMORE High Speed Grinder in many ways which readily show its real merit—in grinding the head of the Wood Turret Lathes for example, and in finishing spindle ends, etc.—the high speed of the DUMORE giving a result much superior to that obtained from slow speed grinders.

Here is a tool in which perfect running balance is combined with correct cutting speed. With a DUMORE in the shop there is no costly tearing down of jobs—no wasteful delay. It is set up easily and quickly wherever it is needed. The DUMORE can solve your grinding problems. It is the only tool on which you may surely rely for speed and accuracy.

Your dealer sells DUMORE Grinders
Ask him for a demonstration.

WISCONSIN ELECTRIC COMPANY
4319 Sixteenth Street RACINE, WISCONSIN

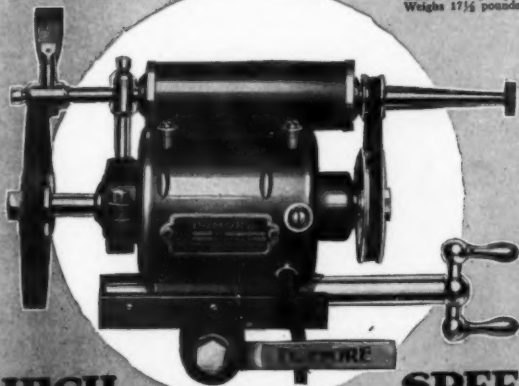
DUMORE

RE
ER

Machine Tool Builders Use the **DUMORE**

EQUIPMENT A

For general tool room use.
Includes High Speed Internal Spindle A with reach of 3 inches. 30,000 R.P.M. Comes fully equipped. Weighs 17½ pounds.



Y
N

HIGH SPEED GRINDERS

Push 'em to the limit!

The excess of power built into "Standard" Electric Tools prevents overloads and burnouts

Motors are force ventilated by an improved method. Operators are protected against shock, motors against oil-soaked insulation, preventing injury and avoiding expense. They are light for their great rigidity. List of users on request.

Special information and data will be gladly furnished by our Engineering Dept.

**The Standard
Electric Tool Co.**
Cincinnati, Ohio



LESS NOISE—MORE WORK



That is exactly what this machine will mean to you. There are no hammer-like, nerve-racking blows with the

Grant Rotary Rivet Spinner

It rolls or swedges the rivet shank and produces results greater in quantity, superior in finish and uniformity and more dependable than any other machine on the market today. Its speed is limited only by the ability of the operator to feed it.

Send for Catalog, or send us a sample of your work, or both

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

Thor Portable Electric Tools, Drills and Grinders

Equipped with a Uni-
versal Motor for Direct
or Alternating Current

LICENSED UNDER BURKE
UNIVERSAL MOTOR
PATENT

No. 01



$\frac{1}{2}$ -inch
Drilling Capacity

For Drilling
Reaming and
Wood Boring

*Send
for
Circular*

Agents
Wanted

Jacobs Chucks used as
regular equipment

**Independent Pneumatic
Tool Company**

Chicago New York Pittsburgh Cleveland Detroit
San Francisco Birmingham Montreal Toronto



No. 7 Polishing Lathe

Improve Your Polishing and Buffing
Department by the Installation of

“W and P”

—Polishing and Buffing Lathes—belted from below through the hollow base, eliminating the carrying of dust and lint by drive belt.

We manufacture more than twenty different sizes and styles of polishing and buffing machinery—suited to every need.

Ask for Bulletins Nos. 19-20-21-22-23-25-26-27 and 28, etc.

Deliveries—Most Sizes and Styles Direct From Stock.

The Webster & Perks Tool Co.
Box 1340 **Springfield, Ohio, U. S. A.**

Marschke Motor Driven Grinders

For Alternating or Direct Current



ECONOMY A. C. GRINDER

(See Illustration)

**2 or 3 Phase, 60 Cycle
220-440 Volts**

Emery wheel, 12" x 2".

Motor, 3 h. p.

Emery wheel collar 5½" x 1¼".

Length of arbor, 26".

Arbor where wheel goes, 1¼" diameter.

Center of arbor to floor, 39".

Base on floor, 20" x 23".

Speed, no load, 1,800 r. p. m.

Speed full load, 1,720 r. p. m.

Motor entirely enclosed.

Journal self-aligning S.K.F.b.b.

Automatic oil switch.

Exhaust fan, 6" x 2".

Exhaust fan bearing, S.K.F.b.b.

2 or 3 Phase, 50 Cycle

Motor 2½ h. p. Speed, 1,500

r. p. m.

All other dimensions same as above.

The Marschke Economy Grinder, either a. c. or d. c., is a standard electrically driven tool of the highest economy. All the electrical apparatus is within, and all that is necessary to install it is to place the machine on the floor and connect two or three wires.

Among its features are a foot pedal, which is fool proof and a big time saver; adjustable cast steel hood and adjustable steady rest; spark breaker to take up space in hood as wheel wears down, which adjusts automatically with steady rest; removable hood cover, with single thumbscrew; stationary exhaust tube; an efficient exhaust fan which starts with motor—no separate exhaust system necessary; double water pot, etc.

Don't miss this Economy Grinder; want description?

Marschke Manufacturing Co.
Indianapolis, Ind.

Speed--Accuracy--Versatility

Developed to a High Degree in the

Greenfield Universal Grinder



Speed: The Greenfield grinder has a speed that meets all the needs of the modern tool room and reduces cost of production to a minimum.

Accuracy is secured through unusual rigidity. Table has no overhang and is supported the entire length by a heavy, braced cast slide. The whole machine is solidly and carefully constructed.

Versatility: 21 different set-ups on the same machine is proof of its wide range. We believe it is furnished with a larger number and variety of attachments than any other grinder selling at anything like the price. None of our attachments has to be taken apart and made over for some other requirement.

Greenfield Machine Company
Greenfield, Mass., U. S. A.

Surface Grinding



The grinding of saws, dies, rings, collars, keys, gear hubs, and a score of other kinds of flat work can best be handled on a Heald Surface Grinder. It is built for production and finish and was designed by a concern with 15 yrs. experience on this class of machinery.

Here is our address. Send us yours for literature or let our Engineering Service Department give you data on how you can best handle your work on a Heald Machine.

The Heald Machine Company
Worcester, Mass.

Protect Your Bearings

Patented
Spring
Cover,
found only
in "Conus"
Oil Cups



Ask
for
catalog
and
sample.

WITH
CONUS
OIL CUPS

Made of high grade Swedish
steel, heavy nicked. Installed
without tapping.

Simple—Efficient—
Economical

American Galco Company,

SOLE DISTRIBUTORS

Grand Central Palace, New York City



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

GITS OIL CUPS

Give perfect satisfaction where
others fail. State style and size in
which you are interested, and we
will send free samples and catalog.

GITS BROS. MFG. CO.
1940 50. KILBOURN AVE., CHICAGO



Style "H"

—it pays

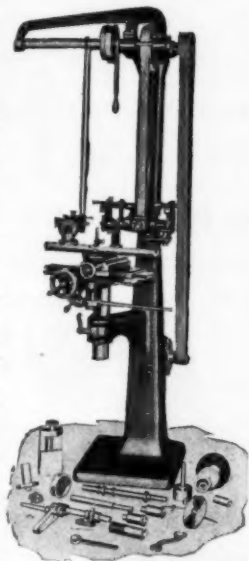
**To be equipped for the quick
and accurate grinding of your
cutters and tools**

AND the "best pay" of them all is the Thompson Grinder. It makes sharpening so easy, that there's no excuse left for operators to limp along with dull tools.

Production

is easily and naturally augmented. The Thompson is equally efficient for circular, internal and surface grinding on cutters, reamers, counterbores, drill bushings, arbors, small machine parts, etc., etc.

*Your superintendent will
enjoy reading our illus-
trated Bulletin C-3—send
for it today—it will pay*



**Self-contained—For Motor drive
Also made for Jackshaft drive**

The Thompson Grinder Co.
Springfield, Ohio

"QUICKWORK"

Registered in U.S.A. and Foreign Countries

Rotary Shears

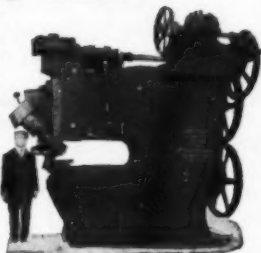
Made in 7 Sizes

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from side of sheet. Leaves square, true edge that requires no finishing. Used in building ships, boilers, tanks, cars & general plate and sheet metal work.

Save 50 to 90%

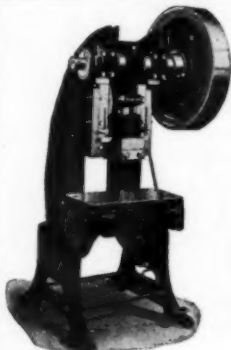
Eliminates Oxyacetylene cutting and plate planing

Write for catalogue No. 60



Patented June 3rd, 1913

THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.
Cable Address "Quickwork," "W. U." and "General" Codes



Simple—Rigid L-J Inclinable Power Presses

Unexcelled for economy and accuracy. Their simplicity and rigidity of construction insure long and constant service with a minimum of expense for upkeep.

Our Dealers

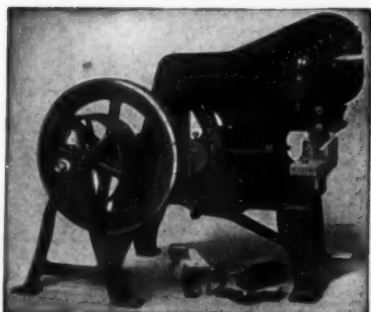
Stocker-Rumely-Wachs Co., Chicago
W. J. Baird Machinery Co., Detroit
Herberts Machinery & Supply Co.,
Los Angeles and San Francisco, Cal.
J. L. Lucas & Son Inc., Bridgeport, Conn.
Brown-McDonald Mch. Co., St. Louis
Northern Machinery Co., Minneapolis
Clark Machinery Co., Cleveland, Ohio
Patterson Tool & Sup'y Co., Dayton, O.
Dale-Brewster Mch. Co., New York
Swind Machinery Co., Philadelphia, Pa.

Write to the nearest, or

Loshbough-Jordan Tool & Mche. Co.

Elkhart, Indiana

Punches—Shears—Bending Rolls
The Beloit
Combined Power Punch And Shear



Built in six sizes. Nos. 51, 52, 53, 54, 55 and 56

Direct connected motor or belt drive

This is the best all around punch and shear in a combined machine of moderate cost. It is heavy and substantial, and amply back geared to require the minimum amount of power; is strong, compact, and easy to operate. Can be equipped with angle shearing attachment, architectural jaw, or for special work.

We are putting out a complete line of punching and shearing machinery in both power and hand tools, also light and heavy duty bending rolls.

We do not overrate the capacities of our machines.

Write for catalogue and prices

Hendley & Whittemore Co.
100 S. State St., Beloit, Wis.

Are You An Economizer?

Try Peters Bros. Abrasive Metal Cutter

This cutter often pays for itself within the first month. It will cut metal easier, better, quicker and 75% cheaper. It makes a smooth, decisive cut through high speed steels, brass, copper, aluminum and all other metals. The simplest cutter on the market--highest in efficiency--lowest in price--lasts a lifetime.

8" Size \$22.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to $\frac{1}{2}$ " square.

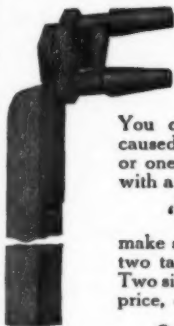
12" Size \$60, with C. S.

Cuts up to 2 $\frac{1}{2}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



SAFETY FIRST

In Putting Belts On Moving Pulleys

You can easily prevent all accidents caused by the operator's using a ladder or one of the old-fashioned belt sticks with a pin in the end.

"Safety First" Belt Sticks

make such accidents impossible. With two tapered rollers, *they can't get caught*. Two sizes, for 1" to 4", and 4" to 6", at one price, only \$1.50 each or \$15 a dozen.

Order a few now and be prepared

The Ready Tool Co.
Bridgeport, Conn.



Peerless **HIGH SPEED**

The Standard Metal Saw of Today



The "Peerless" is some hundred pounds heavier than other machines of its capacity, making it more rigid and accurate—saves both expensive stock and repairs.

The balanced lift, automatic feed, straight line pull, positive blade clamp and general rigidity reduce blade breakage to a minimum. This saves both blades and time.

The pressure of blade remains constant at any angle, but is under easy lever control. This, with the balanced lift, straight line pull, etc., insures the fastest cutting of which the blade is capable.

Furnished with or without our Six-Speed Gear Box, also with motor drive if desired.

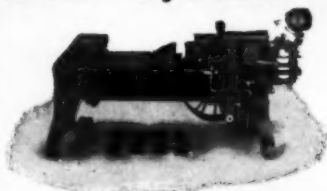
Write for complete description and our 30-DAY TRIAL OFFER

Peerless Machine Company

1606 Racine Street,

RACINE, WISCONSIN

Lourie Hydraulic Bulldozer



75 and
100 Tons
Capacity

Quick
Action

These bulldozers are being operated in many prominent manufacturing plants and always give

SATISFACTION

for bending, straightening, forming and various pressing purposes.

Write for information.

LOURIE MFG. CO. Springfield, Ill.

P. S. We make a full line of Hydraulic Machinery

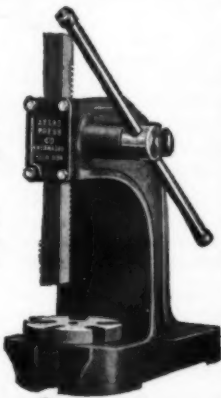
Atlas Presses

pay for themselves
quicker today than
ever before.

Built in all sizes for all
work which can be
practically accomplished by hand.

Atlas Press Co.

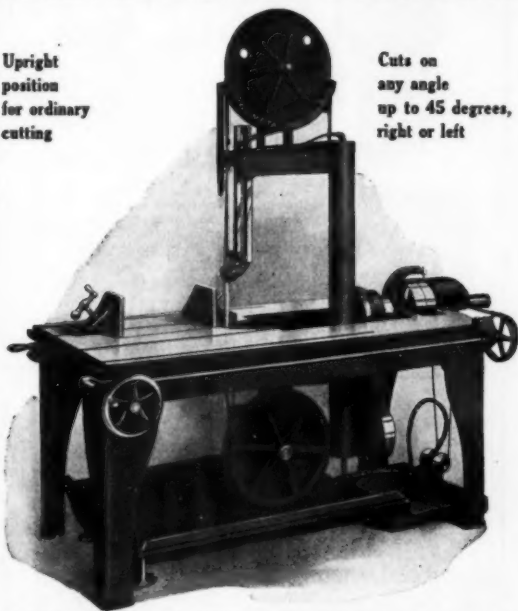
Kalamazoo, Mich., U. S. A.



A Universal Machine of Great Adaptability
MARVEL Metal Band Saw No. 8

Upright
position
for ordinary
cutting

Cuts on
any angle
up to 45 degrees,
right or left



WIDE RANGE and **LARGE CAPACITY**, as well as ease of operation, make this a very versatile metal saw. The blade can be tilted to saw on any angle up to 45 degrees, right or left. The feed can be thrown in or out instantly by means of a thumb lever at front. Band wheels can both be tilted to perfect alignment with saw blade. Capacity of throat: depth 18 in.; height 20 in.; at 45 degrees the height is 14 in.

High-grade in every particular. Send for complete information

Armstrong-Blum Mfg. Co.
341 N. Francisco Ave., Chicago, Ill.



Dependable Punches *For* **Maximum Output**

You value a punch for the quality and quantity of work it will produce. For 30 years many large manufacturers have placed a very high value upon

T. H. L. Punches

because T. H. L.'s are correct in every point. They insure a steady delivery of uniform, accurate and dependable work. Prompt shipment of all regular sizes. Specials on short notice.



Why don't YOU try them?

T. H. Lewthwaite Machine Co.
415 East 31st St., (Est. 1890) New York City

Send us blue prints for quotations on your

Hollow Bored Forgings or Steel Shafts

Such as Lathe Spindles, Piston Rods, Rams, Clutch Shafts, etc., etc. Our products are right in quality, price and deliveries, and it will pay machine builders who use parts of the above character to get in touch with us.

Your inquiry will be given our best attention

AMERICAN HOLLOW BORING CO.
Erie, Penna.

George A. Lewthwaite
Time Tested Punches and Dies



For
Iron Workers
Ship Builders
Boiler Makers
Metal Lathers
Metal Bed Mfrs.
Sheet Iron Workers
Etc., Etc.

Try them out—that's all

Lewthwaite Shear and Rod Cutter

This handy tool is compact, convenient and easy to operate. You will find it just right for many jobs in your shop, for it has power to do easily shearing and cutting even beyond its rated capacity. It will earn its cost in a comparatively short time.

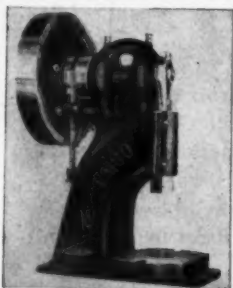


Also
Pipe Benders
Bar Benders
Power Presses
Foot Presses
Etc., Etc.

Get our Catalog of Iron-Workers' Tools for handy reference

George A. Lewthwaite Co.
116 Walker St., - - New York

Emco Bench Press



EMCO "W" Bench Pwr. Punch Press

Weight, lbs.,.....130

Stroke,.... $\frac{3}{4}$ " or $1\frac{1}{4}$ "

Capacity,.... $\frac{3}{4}$ "x1-16"

For rapid production on
Small Parts

Used in quantities by many
large operators.

Specials—Iron Stand, Die
Block, Inclining Blocks, Mo-
tor, Counter.

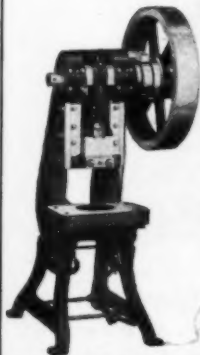
Absolute non-repeat stop
on one stroke.

Made absolutely accurate for
die and other fine work.

Write for circular

The Enterprise Machinery Co., 28 S. Clinton St.
CHICAGO, ILL.

Here Is A Press



With Plenty of Steam
Back of THE PUNCH

HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and
inclinable types. Their great
power backed by rigid design
enable them to do the work
you demand and stand up to it.

Write For Catalog

Rockford Iron Works
Rockford, Ill.

Spring Foot Press

Capacity (steel) 1" Dia., .055 Thickness

Write For Circular



The Taylor & Fenn Company
Hartford, Conn., U. S. A.

WILLARD O. B. I. Power Press

We used to make these presses in a little shop upstairs, years and years ago. They were good presses then; they are even better now, for we have gained in experience, and they are now made in a modern plant with all up-to-date facilities.

They have many points of special merit suggested by our long experience, and are without their superior for any kind of blank cutting, punching, perforating, forming and bending of sheet metal.



Write for specifications and you'll want the Press

The Willard Press & Tool Co.
Cincinnati, Ohio

Partridge Light Punch Press

For making novelties from sheet metal, including such operations as stamping, blanking, piercing, bending, forming, perforating, embossing, shearing and wire cutting. Has exceptional strength for its size.

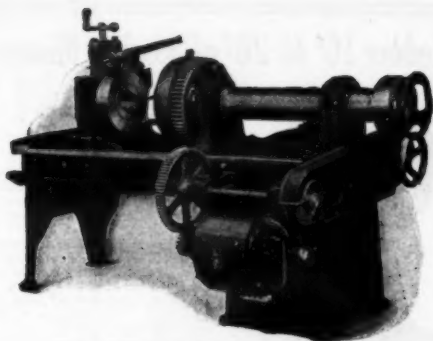
Carefully adjusted to secure accurate working of the dies, and to prevent shearing. Pendulum action of lever gives a stroke of maximum power without tiring operator. Workmanship and material the best.



Write me for the interesting price

E. O. PARTRIDGE, 2041-2049 W. Lake St., CHICAGO

Also Bench, Column & Cabinet Grinders, Polishing Lathes, Light Punch Presses, Hollow Mills, Countershafts, Chuck Arbors and Saw Mandrels



(No. 3 Peerless. All Gears are Covered)

Bignall & Keeler Pipe Machines

Some points of excellence pointedly given—

- ☞ They are equipped with a gear box drive for obtaining the right threading speeds.
- ☞ All uncertainty or guess work in selecting the right speed for threading each size of pipe is positively eliminated.
- ☞ Dies can be changed without removing a screw.
- ☞ Die slot can be cleaned without removing the cover.
- ☞ A rotary oil pump supplies oil to dies and cutting-off tool.
- ☞ Pump is gear driven—no belt to soak up oil.
- ☞ All B. & Ks. have the Peerless adjusting mechanism.
- ☞ The larger machines have two gripping chucks.
- ☞ You have 17 styles and sizes to choose from.
- ☞ You make no mistake in sending your inquiry to us now,

at

EDWARDSVILLE, ILLINOIS

Bignall & Keeler Machine Works

Reduce 10' to 20' of Stock a Minute



With the Etna Rotary Swager

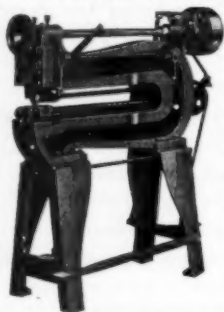
Work can be passed through the "Etna" at the rate of 10 to 20 running feet per minute, depending upon the kind of material and the diameter.

The "Etna" has a hammer action of immense force and extreme rapidity. This method allows the dies to strike about 3,000 blows per minute, as compared with 400 by the next best method. *The economy is obvious.* In many cases the "Etna" has replaced power hammers and has increased production 5 to 10 times. It outlasts any other swager built.

Regular sizes swage $\frac{1}{4}$ to $4\frac{1}{4}$ " diameter. Catalog?

The Etna Manufacturing Co., TOLEDO, OHIO

Does An Unlimited Scope Of Work On Which A Rotary Shear Is Useless



The New "Gray" Sheet Metal Cutter

Cut out of sheets or plates any shapes which can be cut with any character of shear, besides any conceivable shapes which cannot be cut with a shear. A shear will spring or buckle a portion of the metal, but the "Gray" leaves every portion in true form.

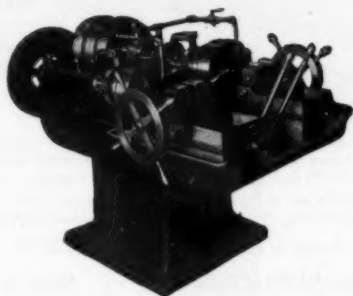
Respective capacities of Nos. 0, 1, 2 & 3:

18"	throat,	$1\frac{1}{8}$ "	plate
34"	"	$3\frac{1}{16}$ "	"
36"	"	$3\frac{3}{8}$ "	"
36"	"	$5\frac{1}{8}$ "	"

Complete details on request

W. J. SAVAGE CO., Knoxville, Tenn.

MURCHEY Pipe Threading Machinery



Murchey Type 2 Semi-Automatic Double Head Nipple and Pipe Threading Machine

Made in Sizes to Cut $\frac{1}{8}$ " to 2" Pipe

It reams and threads in one operation. Cuts from a close nipple to full length of pipe. No attention required after starting pipe into die.

Provided with Murchey Self-Opening Die Heads, which insure quick, positive, universal adjustment—true, accurate, uniform threads.

Cuts 3500 1-inch Threads in 10 Hours

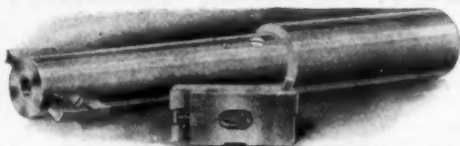
One man will cut on this machine from 3000 to 3500 perfect 1-inch threads or 1750 high-grade nipples in ten hours.

Write for Catalog and prices

Murchey Machine & Tool Co.

58 Porter Street, Detroit, Mich.

Madison Adjustable Boring Cutters and Bars Minimize Tool Room Work



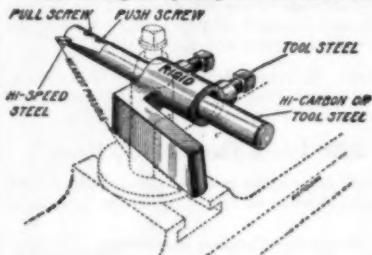
These cutters replace reamers on automatic machines, turret lathes, boring mills, etc. They can be sharpened and set to within .00025 inch in less than five minutes. Pay for themselves very quickly out of the money thus saved in tool room. Made in 45 sizes—from 1½ to 5" diameter. Larger sizes on application.

A factor in economy. May we send details?

MADISON MANUFACTURING CO., - Muskegon, Mich.
Tool Agents Wanted

RIGID Short-Hold Boring Tool

Holder, a tool steel casting, with hardened shank.
See that angular opening between shank and barrel.



**Made
in
5 sizes**

RIGID Tool Holder Co.
Washington, D. C.

Jacobs Chucks

The policy of an organization is shown by the performance of its product. The conscientious manufacturer makes quality his watchword. The policy behind this company is approved wherever Jacobs Chucks are used.



The Jacobs Mfg. Co.
Hartford ~ Connecticut.

"Ampco Tools are Good Tools"

SHORT SET BRIDGE REAMER



MANUFACTURERS OF

**REAMERS, 3 LIP DRILLS, CUTTERS
END MILLS, SPECIAL TOOLS**

American Machine Products Co.

Detroit, Mich., U. S. A.

New Catalog on Request

Coventry Chucks



The strongest on the American market as to gripping power, protection from breakage and freedom from harmful wear. All working parts enclosed to keep out dirt and keep the lubricant in. Made in sizes of 9 to 25-inch diameter.

*Write
for Bulletin
No. 201*

ALFRED HERBERT Ltd.

54 Dey Street, New York

11



McCrosky Super Reamers

FIRST — said the "Super" in the
RATE Locomotive Stoker Com-
pany's plant at Pittsburgh,
Pa. We've been using
"McCrosky" Super Reamers for a LONG
TIME—in fact, all our Reamers are
McCrosky.

One of our 4" Reamers removes .0050" stock from a 3½" deep hole in malleable iron. It does this at least 200 times between grindings, proving beyond question that "McCrosky Cost Cutting Tools" means just what it says.

*Read all about Super Reamers in
McCrosky Efficiency Book No. 6*

McCrosky Tool Corporation
Meadville, Pa., U. S. A.

Branches and Agencies in all Principal Cities
Export Manager, B. Whittaker, 21 State St., New York

Pat. Jan. 30, 1917



Automatic Extension Reel



For electric lamps; also for electric portable drills, grinders, etc. Light just where wanted. Automatically rewinds, and locks at any point. 25 ft. cord. Approved by Underwriters.

The Cincinnati Specialty Mfg. Co., Inc.
1913-21 Powers St., - Cincinnati, Ohio
Branch Offices: East Pike St. & Boylston Ave.,
Seattle, Washington; 39-41 Cortlandt St., New York

"LOGAN" Air Operated Chucks

Earn More than Ordinary Air Chucks



The superior earning power of this remarkable air chuck is fast making many new friends for it. The body is of one-piece construction; the improved jaw operating mechanism insures maximum gripping power; it grips internally and externally; overhang is reduced to a minimum. Logans are dust-proof and the design is a distinct advancement. Used by a number of the biggest machine tool builders. We also make on order a complete line of air-operated labor-saving devices. We solicit your inquiry.

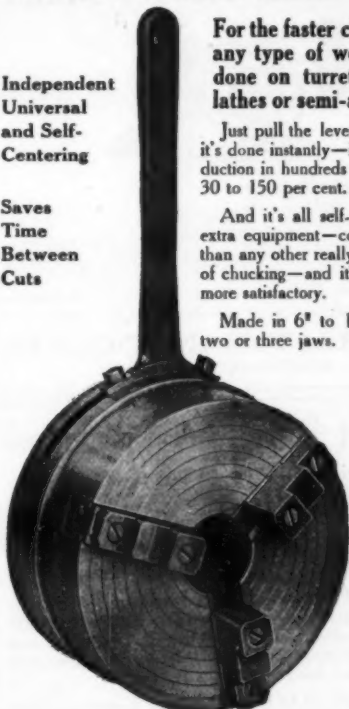
Frank G. Payson Co., General Sales Agents
9 S. Clinton St., Chicago, U. S. A.

Made by The Logansport Machine Co., Logansport, Ind.

Barker Wrenchless Chuck

**Independent
Universal
and Self-
Centering**

**Saves
Time
Between
Cuts**



**For the faster chucking of
any type of work that is
done on turrets, engine
lathes or semi-automatics**

Just pull the lever—that's all—
it's done instantly—increasing pro-
duction in hundreds of plants from
30 to 150 per cent.

And it's all self-contained—no
extra equipment—costs much less
than any other really rapid method
of chucking—and it's simpler and
more satisfactory.

Made in 6" to 16" sizes, with
two or three jaws.

*Ask
for
our
new
Catalog.
It is
full of
good
things.*

Thomas Elevator Company

CHUCK DIVISION

31 S. Hoyne Ave., - - - Chicago, U. S. A.

Branch Office: 725 Park Row Bldg., New York City

Continuous Rotary Miller



**Castellating
Screw Slotting
Slab Milling
Straddle Milling**

High production. Positive accuracy. Low cost of operation.
Enquire of your dealer or write us for full details.

THE CRAFTSMAN TOOL CO.
CONNEAUT, OHIO

The Alert Boring And Facing Tool



High Speed Steel Blades

Made in Three Sizes

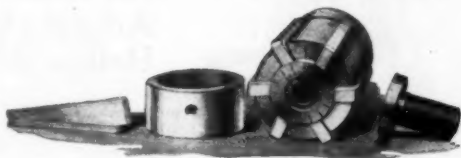
FOR USE on turret lathes, automatic screw machines and drill presses, for facing, counterboring and radiusing where a fine finish is desired, and for boring large holes where the cost of high-speed drills is prohibitive. It has bored very accurate holes with a good finish up to six inches deep.

WE ALSO MAKE Ratchet Tap Wrenches, Roller Grip Arbors and Roller Grip Mandrels—all patented; High-Speed Solid Tap Wrenches and Hand Knurling Tool Holders.

Write for descriptive circular "H"

Alert Tool Co., 237 N. 6th St.
Philadelphia, Pa.

THE CASHMAN
Adjustable Shell Reamer
Often Outlasts 20 Solid Ones



The Few Parts:—

Assures you of production-boosting simplicity and the economy of great durability. We claim—and stand ready to back it to the limit—that *the Cashman is the finest precision tool of its kind made today.* Not only does it do accurate, dependable work, but as a rule it lowers shop costs.

The blades are heavy, and can be used their entire length of adjustment. The lip on the blade, as shown in illustration, insures great rigidity. Unless otherwise specified, blades are of high speed steel. The Cashman reamer cannot change its size in the hole.

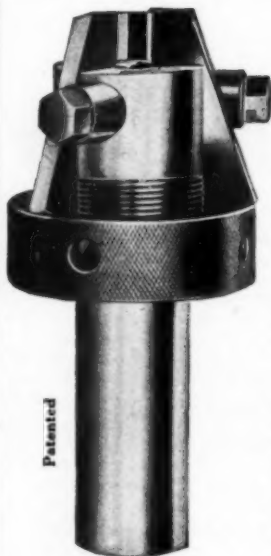
Glad to let you try one out in your shop at our risk and expense—today

Cashman Tool Company
Waynesboro, Pa.

Genesee Tools

And Save Investment a

The Genesee Adjustable Hollow Mill



Increases output. Cuts 12" to 15" a minute in steel. Never clogs up with chips and cannot change in size, as a solid tool will do after a few grindings, and is always in condition to utilize machines to their full capacity, which insures the utmost in production. Stronger than solid tools, and quickly adjustable to the 1000th of an inch.

Saves costs. Only 14 sizes cover the entire range from $\frac{1}{4}$ " to 2", replacing hundreds of solid tools, and one set of blades outlasts 3 to 5 solid tools, saving in investment cost. It saves time costs for the same reasons that it materially increases output.

*No shop should be without a set of these mills
Write for complete description and price list*

Genesee Manufacturing Co., Inc.

Manufacturers of Adjustable Hollow Mills, Facing Tools

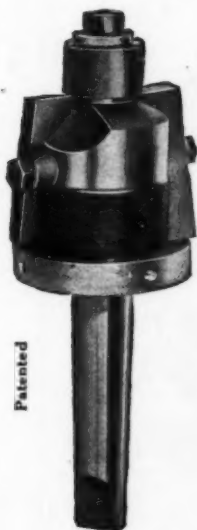
3 Raise Output

nt and Operating Costs

The Genesee Facing Tool

Counter-Bores, Faces,
Forms, Etc.

Made of Chrome Nickel
Steel, Hardened.

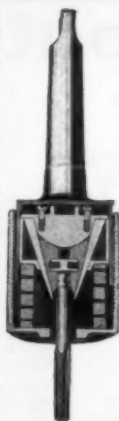


Increases output. The chip space in the Genesee Facing Tool never varies, no matter how many grindings. Contrast this with solid tools, which soon lose their efficiency after repeated grindings, the lessened chip space causing them to become clogged. The "Genesee," on the other hand, is always 100% efficient.

Saves costs. But the Genesee Facing Tool is even greater in its *economies*. This modern producer uses high-speed steel to its limit *at a fraction of the cost of solid tools*, saving hundreds of dollars. Sharpened without any special holder and quicker than solid tools.

*The economies of these tools are apparent
Better have specifications and price list*

o., Inc., - Rochester, N. Y.
Tools, and Inserted Tooth Face and Side Milling Cutters



Eliminate Tap Breakage

Many a tapping job has been a regular tap breaker until the operator tried out a

Woodstock Improved No-Tap-Breakage Chuck

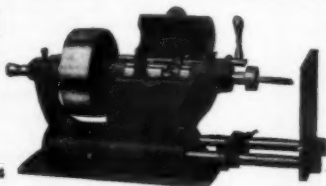
As soon as this chuck was employed, tap troubles were over. This chuck automatically releases tap the minute it binds or strikes bottom. It will enable you to utilize about 99% of the strength of the tap without breaking it. It can be used with any automatic reverse, reversible drill press, tapping machine or lathe.

Write for details and trial offer

Peter Bros. Mfg. Co. 115 Railroad St., ALCONQUIN, ILL.

Workwell Tapping Machine

**Built for Service
Has Many Fine Points**



2 bar slide to hold work straight with tap.

Steel gears 2" diameter, enclosed and running in oil.

Extra large hardened clutch. One loose pulley with hardened clutch. Non-slip tap holders. Die holder for threading outside threads. Stop adjustment for any depth of thread.

MADE IN TWO SIZES.

Type B 2 for threads to $\frac{1}{4}$ " diameter Type C 2 for threads to $\frac{1}{2}$ " diameter

Give it a trial. Manufactured by

Workwell Engineering & Mfg. Co.

Dept. 2

616-620 W. Monroe St., Chicago, Ill.

Your Hands Do Save Time



When Reversing Jaws

If they use the Dayton Quick Change Chuck. The chuck with the Quick Reversible Jaws will hold large diameter work and small diameter work with the same set of jaws. Quickly reversed to either position. The 4-Jaw Independent, made in sizes from 8" to 36" diameter. Stocked by all supply houses in the principal cities.

MANUFACTURED BY

The Dayton Reliance Tool & Mfg. Co.
Dayton, Ohio

STOCKED BY THE FOLLOWING DEALERS:---

The E. A. Kinsey Co., Cincinnati, O.
The Cleveland Tool & Sup. Co., Cleveland, O.
Broadway Machinery Co., Cincinnati, O.
The Osborne & Sexton Co., Columbus, O.
The T. B. Rayl Co., Detroit, Mich.
Central Distributing Co., Jackson, Mich.
C. E. Fales Machinery Co., Detroit, Mich.
The Patterson Tool & Sup. Co., Dayton, O.
The M. D. Larkin Supply Co., Dayton, O.
The Mid West Machine Tool & Supply Co.,
Davenport, Iowa.

The Vonnegut Mche. Co., Indianapolis, Ind.
Frank A. Hicks, Los Angeles, Cal.
Neill-LaVielle Supply Co., Louisville, Ky.
Peoples Hardware Co., Muskegon, Mich.
Oliver H. Van Horn, Inc., New Orleans, La.
Cummings & Emerson, Peoria, Ill.
Colcord-Wright Machinery & Supply Co.,
St. Louis, Mo.
The St. Louis Machinists Supply Co.,
St. Louis, Mo.

Draw-in and Thrust Chucks

for Tool Room Lathes and Screw Machines. Look for the name "Hardinge Brothers" and write us. And did you ever ask us to make those—

Screw Machine Collets

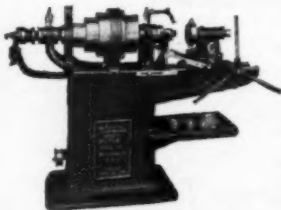
with regular or irregular holes? We are prepared to make good deliveries. Why not try us next time? Quantities never too small or too large to interest us.

When making inquiry, kindly refer to "Chuck Department"

Hardinge Brothers, Inc.
Chicago, Ill.

Victor Nut Facing Machine

For Rapid Facing True to Thread



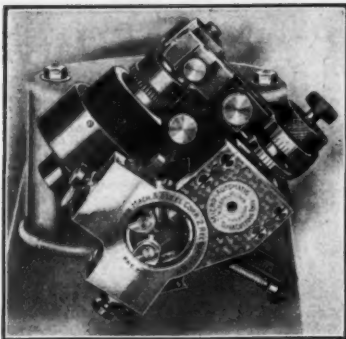
Speed—The average operator faces 10 to 12 $\frac{1}{4}$ " to $\frac{3}{4}$ " nuts a minute; larger ones in proportion.

True to Thread—Facing true to thread is insured by facing nuts on a hardened threaded mandrel.

Substantial—Seldom, if ever, needs repairs. No parts ex-

posed to wear except high-speed steel cutters, which have only to be ground for proper clearance, and are cheaply replaced when worn down. Made in two sizes. Arranged for motor drive if desired. Write for complete description.

VICTOR TOOL COMPANY, - WAYNESBORO, PA.



Cruban Micro - Automatic Taper Cutting Tool

Every part is built like a micrometer. The taper is easily adjustable; head-on pressure of the stock against a plunger controls the movement of the cutting tools. The pair of cutters—roughing and finishing—are quickly set to any size stock up to $\frac{3}{4}$ or $\frac{1}{2}$ inch.

This Taper Cutter can be used in any turret or tailstock. Even if the turret has "play", accuracy is not impaired. Work can be turned out in thousand lots accurate to 0.0005 inch. Any slight variation of the taper can be corrected instantly.

*"FAIRBANKS O. K." guarantees this and many
other machines and specialties. Ask us about them.*

The Fairbanks Company Administrative Offices, NEW YORK

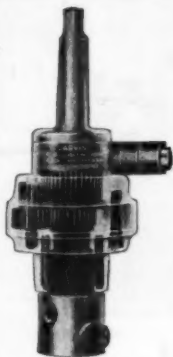
Branch Houses

Albany	Bridgeport	Detroit	New York	Rochester
Baltimore	Buffalo	Hartford	Philadelphia	Scranton
Birmingham	Cleveland	Newark	Pittsburgh	St. Louis
Boston	Chicago	New Orleans	Providence	Syracuse
	Utica	Washington		

Havana, Cuba London, Eng. Birmingham, Eng. Glasgow, Scotland
Paris, France

FAIRBANKS





The Jarvis High-Speed Tapping Device

With the "Jarvis," you can convert a single-spindle drill or a lathe into a tapping machine.

On a four-spindle drill you can drill, ream, counterbore and tap your work in one setting of jigs.

The direct ball drive never clinches or binds. The rapid ball reverse is through gears. Extremely easy in action and saves tap breakage.

A specially designed chuck is part of this device, making special taps unnecessary.

Say the word and we'll get busy

THE CHARLES L. JARVIS COMPANY
GILDERSLEEVE, CONN.

A Bench Tapping Machine

That's Extremely Sensitive and Highly Productive



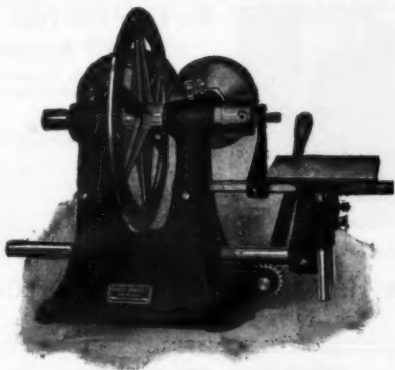
Bicknell-Thomas
Friction Driven

Sizes
0 to 1/4"

Automatically adjusted by the amount of pressure the operator puts on spindle, making a *very sensitive drive* and eliminating the sudden strain on tap when reversing. The most simple, durable, completely equipped, compact, easiest operated and greatest producer of any bench tapping machine built. Attach to nearest electric socket. Want proofs and prices?

Bicknell-Thomas Company
90 Wells Street, Greenfield, Mass.

Rickert-Shafer Machines Do Fast, Economical Tapping



The illustration shows our $\frac{3}{4}$ " Horizontal Bench Tapping Machine, which we also make in 3-16" and 5-16" sizes, bench or floor type. Can be direct connected to motor.

Our machines are of excellent design and embody expert workmanship. They are all friction driven, which insures a smooth running chuck spindle, and practically eliminates all tap breakage. Maximum production is achieved with ordinary labor or a handy boy.

Our Verticals are made in two sizes, $\frac{1}{4}$ " and $\frac{1}{2}$ ". The Radial has capacity for $\frac{1}{4}$ " and $\frac{1}{2}$ " in steel, and is a favorite with manufactures of auto and machine tool parts. Its rigidity insures accuracy.

It will pay you to write for our Tapping Machine Bulletin

Rickert-Shafer Co., 1110 Cherry St., Erie, Pa.

Offset Drilling Attachments

Made in Standard and Special Forms



For Every Drill Press To Drill Anywhere

They drill efficiently in hard-to-get-at places where nothing else can reach.

An Enlarged Capacity

enables us to fill all orders. Our former output was all taken by manufacturers of automobiles, tractors, aeroplanes, etc., where they have proved their worth.

Folder O. K. explains. Where shall we send it?

The H. E. Harris Engineering Co.
Bridgeport, Connecticut

The Walton Tap Extractor



Safely Removes Broken Taps

Saves Time, Temper and Money

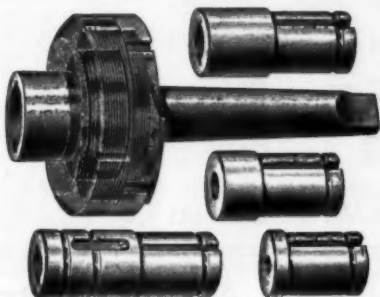
A good deal of time and temper is often wasted while trying to remove a broken tap. A badly mutilated thread is often part of the result. The Walton Tap Extractor consists principally of four crucible steel fingers which are pushed down into the flutes of the broken tap, after which a wrench is applied to the tool. This device removes almost any broken tap in a very short time with no damage to the thread. Sizes from No. 8 to 1 1/4".

Folder, or trial, or both, on request

THE WALTON CO., Hartford, Conn.

The Safety ^{Friction Driven} Drill and Tap Holder

Saves Time, Tools and Temper



The Four Sizes Cover 0 to 2½ in. diameter

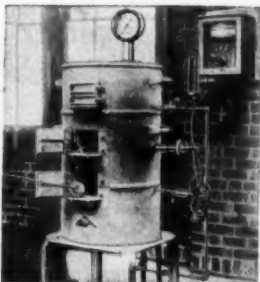
This power driven holder permits tapping to the bottom at full speed without danger of breaking anything, for when the tap is subjected to any undue strain it stops before reaching the breaking point while the spindle revolves. This saves time, taps and temper.

There is nothing about it to break or get out of order. It is unequalled for simplicity, rapidity, economy and accuracy, and it is giving splendid satisfaction wherever used. Change is made from drill to tap, or tap to drill, without stopping the spindle.

Try it out on your most difficult work

The Beaman & Smith Co.
Providence, Rhode Island

Use Less Fuel By Installing The "Triad" 3-in-1 Furnace



The three steps commonly employed in treating high-speed steel—pre-heating, high-heating and drawing the temper—are all accomplished simultaneously in the three compartments of this one-man, single burner "Triad" furnace.

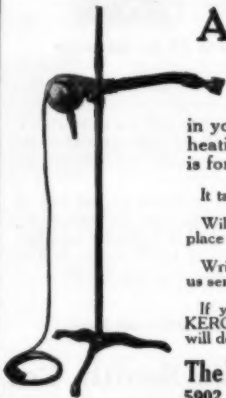
It burns either gas or oil, and will enable you to save about $\frac{2}{3}$ of your fuel bill. The original cost is not high, and the floor space occupied is only 2 square feet.

It heats high-speed steel in 20 minutes from a cold start. It has no cold corners and prevents oxidizing, pitting and scaling.

Glad to mail full description. Ask for Catalog No. 5.

The W. R. Bennett Co., P. O. Drawer X
Elmwood, Conn.

A Gas-Electric Blow Torch



in your shop is just as useful for heating applications, as a lathe is for general machine work.

It takes only a few minutes to install.

Will replace your forge, and take the place of high priced furnace equipment.

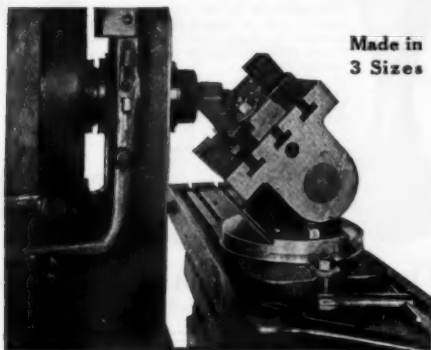
Write for a descriptive folder or have us send a torch for trial in your shop.

If you have no gas, ask about our KEROSENE FLAMEBLAST torch; it will do the same work.

The North American Mfg. Co.
5902 Carnegie Av., Cleveland, Ohio

The Reid

A Universal Angle Fixture
Of Great Quickness and Accuracy



Made in
3 Sizes

THE DOUBLE VERNIER gives instant readings of 1-12th of a degree, and even a finer adjustment with a sine bar. Swivels 360 degrees horizontally and 180 vertically. Invaluable for quick setting of work for drilling, milling, planing, shaping and grinding, as well as for die sinking, tool and experimental work.

The "Reid" does away with haphazard set-ups and makes it easy for an unskilled operator to do accurate work in the shortest time. The design eliminates all overhang. It is made to withstand the strain of loads that are even beyond ordinary requirements without chatter or distortion.

It will be our pleasure to explain fully upon request

Reid Bros. Co. 59 Park St.
Beverly, Mass.

Export Department, 77 Broad St., New York City
English Agents, Oliver Machinery Co., Ltd., 201-03 Deansgate, Manchester, Eng.

Also Manufacturers of the Reid Surface Grinder

Steel Handles

**Ball Crank, Compound Rest,
Ball Lever Handles, etc.**

The *price* is below manufacturing cost of cast or forged handles, and in *quality* there is no comparison, being accurate, highly finished and ready to attach.

Get our catalog of standard handles, with prices and discounts, and note the many advantages.



The Cincinnati Ball Crank Co.

Oakley, Cincinnati, Ohio



Armstrong Clamps and Dogs
Drop Forged Steel

**All Shapes
All Sizes**

**Best Quality—Alloy Steel
Screws**

Complete Catalog Free



Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

Practically Indispensable

The Universal Angle Plate



8"x10" Worm Adjusting—Made in Four Sizes

No matter what the operation is, milling, planing, boring, shaping, drilling or grinding, if it involves an angular adjustment of any kind, this plate will give it to you instantly and correctly. No fussing, no calculating; you read it directly from the graduations on the plate, and by means of the vernier attachment down to one-twelfth of a degree. Its accuracy is beyond question.

This is a patented device, containing improvements which we shall see are fully protected. They are essential to thoroughly good angle plate.

You will miss a splendid tool room and shop convenience if you do not use this plate wherever it can be applied to your work.

Let us show you

Boston Scale & Machine Co.

100 Ruggles Street,

Roxbury, Mass.

The Buckeye Electric Blue Printing Machine

"The Sun that Never Sets"

Entirely self-contained. Uses but one lamp. Extremely simple. A boy or girl can handle it in connection with other work -- current cuts out automatically. Permits a wide range of speeds, easily controlled by our new governor.

Its use in over 1,500 plants
with thoroughly satisfactory results has proven its economy and high efficiency.

*It's the machine for results
May we post you more fully?*

Buckeye Engine Co.
Salem, Ohio



The WICKES BLUE PRINT SYSTEM

—is today being
adopted by the
WORLD'S largest
industries.

WHY?

*Send us a re-
quest and we
will tell you*

Wickes Bros.

1802 Water St., Saginaw, Mich.
Builders of Heavy Machinery

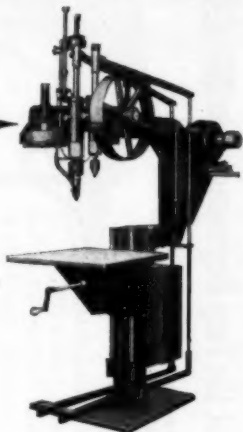


REYNOLDS POWER DRIVEN AUTOMATIC MAGAZINE FEED SCREW DRIVING MACHINE

**Dump a gross or
more of machine
screws here** →

Then press a foot lever,
and the machine auto-
matically magazines screws
and drives them to de-
sired depth with me-
chanical precision.

**Drives 8,000 to 16,000
Screws a Day**



Magazine Fed Screw Driving

Is today a considerable factor in reducing costs and increasing production in scores of the best plants of the country. Many of them now have dozens of Reynolds Machines in use. Let us tell you what they say about its practical operation on all kinds of work under divers conditions—usually with unskilled labor. Automatically magazines and drives hex.-head, square-head or filister-head cap screws with equal facility.

*Describe your work, giving outside dimensions
and gauge and length of screws used.*

The Reynolds Machine Company
Dept. H. H., Massillon, Ohio

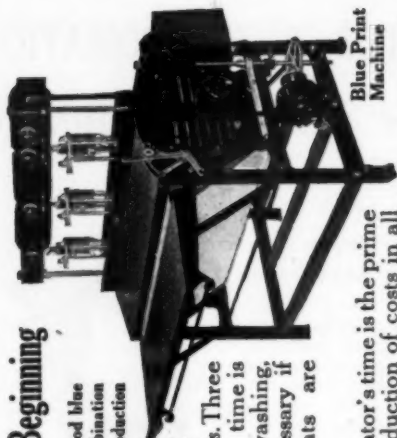
Cut Your Production Costs at the Very Beginning

Quick blue printing saves time in factory and office. Good blue printing lessens waste of material, as well as time. A combination of both means economy and will aid in speeding up production.

Paragon Equipment will produce clear, sharp, permanent prints, dried and ironed, ready for use in *four minutes*. Three minutes of this time is allowed for washing, which is necessary if permanent prints are desired.



Print Drying
Machine

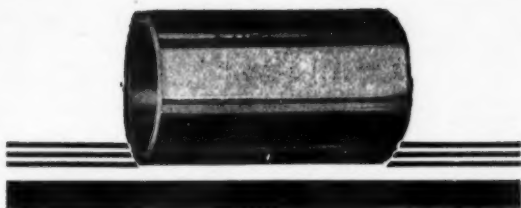


Blue Print
Machine

Saving the operator's time is the prime factor in the reduction of costs in all branches of industry. Paragon machines accomplish this for the Blue Printing Departments.

May we prove it? Ask for Catalogue "K".

PARAGON MACHINE COMPANY, ROCHESTER, N. Y.



BUNTING ready-to-assemble
Bushings wear longer, are more accurate, and can usually be obtained quicker and at less cost—than when you machine your own.

Ask for quotations

The Bunting Brass & Bronze Co.
755 Spencer St., Toledo, Ohio



Trade Mark

Contract Work Wanted

This department is exclusively for the use of those desiring to secure contracts for anything in the line of foundry or machine work, including press work, dies, jigs, fixtures, gears, die castings, drop forgings, screw machine products, springs, bolts, nuts, rivets, etc. Advertisements are to be set with side headings as shown, and with such display as may be appropriate to the copy used. Rates: one-eighth page, per month, \$4.

<p>Screw Machine Products</p>	<p>The New Britain Machine Co. New Britain, Conn. Long experience, a complete organization, and the most efficient machinery put a real meaning in the slogan—<i>"Quality, Service, Economy."</i> Large work a specialty. Let us figure on your requirements.</p>
<p>Dies Tools Special Machinery</p>	<p>Robbins, Gamwell & Co. Pittsfield, Mass. Accuracy and efficiency in gages, dies and special machinery, is our specialty.</p>
<p>Dies Gauges Fixtures Special Machines</p>	<p>The Steber Machine Co. Established 1891 Utica, N. Y. Incorporated 1906 We have made a specialty of accurate work for the past 27 years.</p>
<p>Is Your Equipment All Busy?</p>	<p>Why not get in some special work to fill in the idle time? Let the manufacturing public know what you can do, and what machinery you have to do it with. Space in this department costs but little, and covers the metal manufacturing field as with a blanket. Why not try it?</p>
<p>Jigs Fixtures Special Machinery</p>	<p>The Bock Machine Co. 3618 Colerain Ave., Cincinnati, Ohio Now in position to make prompt delivery. Work is of highest quality. If you are looking for delivery, drop us a line.</p>
<p>Production Work Fixtures Dies</p>	<p>The Perfection Auto Parts Co. 420 Lakeside N. W., Cleveland O. Machining of small forgings and castings in quantity to order. Development and manufacture of dies and fixtures for interchangeable parts.</p>
<p>Work for Your Idle Equipment</p>	<p>You can get it, if you will let manufacturers know just what you can do. Tell them through this department. The cost is small; the distribution covers the metal manufacturing people everywhere in the United States.</p>

CONTRACT WORK WANTED

<p>Drop Forgings (All Kinds)</p>	<p>Bonney Vise & Tool Works, Inc. Allentown, Pa. Quick and Accurate Drop Forging and Finishing Good tools, good men, and good management insure precision and promptness. Investigate; when you know our facilities and our record you'll want our service.</p>
<p>General Machine Shop Work</p>	<p>DELOS SHAFFER Muncy, Pa. Machine shop work wanted. Thirty years' experience. Give me a chance to figure.</p>
<p>Pressed and Stamped Steel Parts</p>	<p>Geuder, Paeschke & Frey Co. 1325-1700 St. Paul Av., Milwaukee, Wis. It will pay you to let us figure on such pressed, stamped or drawn metal articles or parts as you may require, be they made of steel, aluminum, brass or copper. Our 15-acre plant at your disposal. Get the benefit of our "Knowing how since '81." Send samples or blue prints for est.</p>
<p>Want Orders for Die Casting?</p>	<p>This is the place where you can offer your facilities to users of metal products everywhere in the United States. Many readers of the Tool List are in the market for die castings, and they would welcome information as to what you can do for them.</p>

Want More Orders?

They are to be had for special contract work in machining, stamping, forging, casting, welding or any department of machine manufacturing. The problem is merely to bring the capacity and the demand for it together. If you have the idle capacity, and want work for it, the "Contract Work Wanted" department of the Tool List will help you to get in touch with machine-making plants everywhere in the United States. Its circulation among American metal working plants is country-wide. There is no other available means by which you can reach so many.

Don't let your equipment stand idle. That costs money — a lot more than it will cost you to find work for it. Write me for further information, and for a copy suggestion, which I shall be glad to make without cost or obligation.

A. H. Hitchcock, Publisher

Hitchcock's Machine Tool List
1220-1235 Caxton Building, Chicago, Ill

Railway and Repair Shops Use Underwood's Pipe Bender



Bends a 2-inch Pipe in 2 Minutes—Cold

HERE'S a handy and dependable portable pipe bender that bends any size of pipe up to 2-inch cold, without flattening or splitting. The piston is forced back by a spiral spring, so that front head and piston rod require no packing. Dies are easily changed and adjusted. Works on 80 lbs. steam or air pressure.

Our comprehensive line of time and money saving tools includes the following:—

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; pipe benders; locomotive cylinder borers; boring bars for lathe work; crank pin turners; reflex water glass grinders; and special machines built to order.

*Your superintendent will find our Catalog interesting
And you will find the use of our tools profitable*

H. B. Underwood Corporation

1015-25 Hamilton St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue. Minimum charge, **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you require is not listed, use the blank enclosed to make known your wants to the publisher.

FOR SALE BY

J. Horat,

LaFayette, Indiana

Automatic screw machine, 1" Cleveland, in good condition.

Automatic screw machine, 1/2" Cleveland, in good condition.

Gas engine, 12 h. p. Fairbanks-Morse, with radiator, in good condition, on truck frame.

FOR SALE BY

Beaver Machine & Tool Co., Inc.

Newark, N. J.

Automatic tapping machine, No. 1 Garvin, in excellent condition.

Oil engine, De La Vergne, 20 h.p., in good condition; has been recently overhauled, and we believe will generate about 30 h. p.

Make us an offer.

FOR SALE BY

J. L. Osgood,

45 Pearl St., Buffalo, N. Y.

Automatics, 1/2" Cleveland, (2).

Chucking lathe, 21" Potter & Johnston, \$350.

Gas engine, 7 1/2 h. p.

Gas engine, 50 h. p.

Shell cutting-off machine, 14" Williams.

FOR SALE BY

J. Bleser Mfg. Co.,

16th & Madison Sts., Springfield, Ill.

Band saw, metal, Thompson.

Drills, Avey and Demco high speed bench and floor.

Hydraulic presses, 150 to 400 ton, pumps, etc.

Lathes, engine and speed, all sizes up to 24"x10', also precision lathes.

Pipe and bolt cutter, 2".

Shears, Loy & Nawrath, 8' sq., 14 gauge, 95% new.

Complete outfit for manufacturing Ford valves, electric welders, etc.

Complete outfit for manufacturing crochet needles.

FOR SALE BY

Norton Brothers Mch. Co., 6th & Baymiller Sts., Cincinnati, Ohio

Broaching machine, LaPointe.

Drill, 36" Aurora upright, sliding head, with tapping attachment.

Grinder, No. 60 Heald internal.

Grinder, 16"x30" No. 2 Brown & Sharpe universal cylindrical.

Hammer, 40 lb. Bradley, helve.

Large stock of Lathes, Radial Drills, Milling Machines, several Shapers, high pressure Boilers, Engines and miscellaneous machinery and supplies.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co.,

725 St. Clair Ave., East, Cleveland, O.

Selections from Stock.

AUTOMATICS.

2½" and 4½" Model A Cleveland automatics, with large equipment, 75%.

BAR STOCK MACHINES.

2" P. & W. screw machine with toolholders, 70%.

3" P. & W. screw machine with toolholders, 70%.

Back chasing attach. for Nos. 4 & 6 Warner & Swasey screw mchs., 95%, (4).

No. 1 Foster screw machine, 80%.

No. 3 Foster screw machine, power feed, 80%.

Wood tilted turret screw machine.

BOLT AND NUT MACHINERY.

1½" National bolt cutter, 2-spindle, full set of dies, 99%.

Geometric Tool Co. bolt threaders, 85%, (2).

1" National bolt header, 80%.

2" Acme single spindle bolt cutter, 85%.

1" Acme single spindle bolt cutter, 85% (2).

BORING MILLS.

S. H. Binsse horizontal boring machine, 18x40" table, 80%.

DRILLING MACHINES.

30", 22½", 24" and 28" Sibley drill presses, new.

Quint turret drill, small size, 80%.

2-spindle 24" Barnes all geared drill, pump and piping, and spindle with tapping attachment, 85%.

26" Barnes, sliding head drill presses, 70%, (2).

26" Barnes drill presses, with tapping attachments, (2).

GEAR CUTTER.

26" No. 3, Brown & Sharpe plain gear cutter, with all parts, 85%.

GRINDERS.

P. O. Point New Yankee drill grinder, cap. ½" to 2½", wheel trimming device, new.

18" Bryant internal, late model, 75%.

Bridgeport, wet or dry, 18" whl, 80%.

Sterling wet grinder, 12" wheel 80%.

10" x 72" Norton plain, 90%

6" x 32" Norton plain, 75%.

LATHES.

16" x 8' Bradford, quick change gear, 80%, (2).

20" x 10' American, geared head, chuck and turret on shears, 85%.

19" x 10' LeBlond, heavy duty, with turret on shears, 85%.

22" x 10' Prentice Bros., geared head, 85%.

Lo-Swing lathe, 3½" x 60", 85%.

28" x 18' Bridgeford engine lathes, taper attachments, 85%, (2).

MILLING MACHINES.

No. 6 Becker vert., cone pulley, 80%.

Type A Briggs millers, 90%, (6).

No. 4 Hendey, Lincoln type, 80%, (2).

Becker No. 7 Lincoln type, 80%, (2).

Rotary milling attachment for No. 6

Becker, 95%.

Whitney hand miller, 85%.

No. 00 B. & S. pl. hand miller, 65%.

PLANER.

22" x 22" x 6" Wheeler planer, 80%.

PRESSES.

No. 27 Bliss embossing, 2" str., width of bed 32", 1000 tons approx. cap. 80%, (3).

No. 59 Toledo crank, d. b. g., 12 or 18" stroke, friction clutch, 80%.

No. 60½ Bliss rack and pinion drawing press, 80%.

No. 41 Toledo punch press, swinging knee.

RADIAL DRILL.

No. 3 Barnes horizontal radial drill, 80%.

SAWS.

Peerless hi-speed 6" saws, new.

16" Highley cut-off saw, 80%.

11½" Highley cut-off, 14" blade, 70%.

Williamson metal band saws, 70% (2).

6" Clements tilting band, 75%.

SLOTTERS

15" Dill, with countershaft, tool holders and all regular equipment, 85%.

15" Betts, with countershaft, tool holders and all regular equipment, 85%.

TURRET LATHES.

24" Gisholt, late model, taper attachment, 90%.

24" Gisholt, with all latest improvements, 80%.

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued.

MISCELLANEOUS

Air compressor, Ingersoll-Sargent, with 50 h. p. motor.
 Broaching machine, No. 3-A LaPointe, 85%.
 Die head, 4 $\frac{1}{2}$ " Geometric, 80%.
 Hammer, 160 lb. Mayer, belt drive, power, regular equipment, new.
 Hammer, 6-ton Morgan steam forging, 84" stroke, 26" cylinder, 8" rod,
 double frame, 90% condition, weight 300,000 lbs. approximately, (6)
 Motor, 75 h.p. Westinghouse, good condition.
 Oil separator, small, 80%.

FOR SALE BY

Brownell Machinery Co.,

11-13 Eddy St., Providence, R. I.

Drills, 3-spindle Reed-Prentice, b. b.
 Drills, 4 spindle, Allen, b. b.
 Drills, 4-spindle Rockford, p. f.
 Drills, 6-spindle Taylor & Fenn, p. f.
 Drills, 3' Taylor & Fenn sen. radial.
 Drills, 4' Fosdick radial.
 Grinder, No. 2 B. & S. universal.
 Grinder, No. 1 Landis.
 Grinder, No. 16 B. & S. plain.
 Grinder, 20"x120" Landis plain.
 Grinder, No. 6 Diamond disc.

Grinder, No. 2 Diamond horizontal.
 Lathe, 20"x14' Reed q. c. g.
 Lathes, 12"x5' Worcester.
 Lathes, 16"x8' Hendey, taper reliev.
 Milling machine, No. 25 Bilton, b. g.
 Milling machine, No. 21 Garvin pln.
 Milling machine, Bickford, hd., p. f.
 Miller, No. 4 Hendey, Lincoln type.
 Planer, 30"x30"x10' Powell.
 Screw machine, No. 4 W. & S.,
 type g. f. h.

FOR SALE BY

A. D. White Machinery Co.,

108-114 N. Jefferson St., Chicago

ENGINE LATHES.

18"x 7' Chard, d. b. g., p. c.
 18"x 8' Bell, d. b. g., p. c.
 18"x10' Reed.
 20"x 8' Reed.
 20"x 8' Boye-Emmes, d. b. g., q. c.
 22"x10' Davis, d. b. g., q. c.

24"x10' Putnam.
 28"x 8' Prentice, d. b. g., p. c.
 30"x10' Pond.
 34"x10' Putnam.
 38"x14' Fifield.

MILLING MACHINES.

Briggs type A. (2).
 No. 1-Y Brown & Sharpe.
 No. 6 Brainard, Lincoln.

Model AB Becker, vertical.
 Newton slab, table 13"x65".

TURRET LATHES AND SCREW MACHINES.

No. 3 Foster, plain head.
 20"x5' Bridgeport, (2).
 20"x8' Fay & Scott universal.
 22"x5' Reed.
 21" Gisholt.
 24" Gisholt, big bore.
 3x36" Jones & Lamson.
 16"x5' Dreses Fox Monitor.
 18"x6' American Fox monitor.
 18"x6' Springfield Fox monitor
 No. 1 Garvin, hand, (6).

No. 3 Stecher, hand, (6).
 7/16" Cleveland, ratchet feed.
 1" Cleveland, semi-auto.
 1" Cleveland, friction.
 1" Cleveland, friction.
 1" Cleveland, jigger.
 1" Hartford, (2).
 1" Cleveland, jigger.
 1 1/2" LaVigne.
 No. 1 Brown & Sharpe, 1 1/2" cap., (3).

DRILLING MACHINES.

36" Mueller plain radial.

42" Miles plain radial.

PUNCHES AND SHEARS.

19" throat geared punch.

No. 37 Williams & W. gang punch.

MISCELLANEOUS.

Blower, No. 7 Sturtevant high press.
 Gas engine, 35 h. p. Columbus.
 Gas engine, 55 h. p. Bruce McBeth.
 Grinders, No. 2 Woods tool & cutter
 Grinder, Springfield, 2-wheel water.
 Grinder, Leland & F., water.

Oil gas generator, No. 3 American.
 Profiler, 2 spindle Putnam.
 Saw, No. 54 Nutter-Barnes.
 Shaper, 16" Gould & Eberhardt.
 Shaper, 30" Hamilton.
 Tube cutter, No. 5 Fox.

SECOND-HAND MACHINERY.

FOR SALE BY

Walther Machinery Co.,

629 Main St., Cincinnati, Ohio

Drill press, D—3 Colburn heavy duty, used.

Hack saw, No. 2—A Sterling, power, new.

WANTED TO BUY

Used Lathe, 16"x6' or 8', d. b. g., cone head.

Used Planer, 30"x30"x6' or 8', two heads.

FOR SALE BY

The Osborne & Sexton Machinery Co.,

Columbus, Ohio

Dayton Office: 1118 Lindsey Bldg., 'Phone Main 1524

LATHES.

9" to 13" Barnes, h. s., cp. r., new.

13-15-16 and 18 O. & S., h. s., c. r., new.

18"x 8' Fitchburg, hol. spdl., cp. r.

20"x10' Hamilton, double back gear.

20"x16' American, grd. head, q. c., turret, (2).

22"x10' Bradford, dbl. bk. gr.

24" Steinle, 64" hol. spdl., grd. hd.

24"x10' Gisholt.

No. 3 W. & S. hollow hexagon.

13" Garvin No. 1-SP.

Wells hand screw machines.

14" Niles, traveling head.

16, 18 & 24" Barker, back gear crank.

16" Steptoe, bk. grd. crank.

24"x24"x6" Pease, with motor bracket.

No. 20 Bliss, inclinable.

No. 856 Toledo, 36" stroke, 15,000 lbs.

No. 22-P Toledo, (2).

Perkins, dbl. crank, 16x24 bolster.

Henry & Wright sgl. spdl., high spd.

34" Canedy-Otto plain, new.

Sensitive 1, 2, 3, 4 and 6 spindle.

24", 26" and 28" sliding head.

No. 25 Becker plain, (3).

Ames, Lincoln type, 10"x40" table.

No. 12 Brown & Sharpe.

No. 4 Cincinnati universal.

No. 3 Brainard, 30x7 table.

No. 3 W. & M. wet surface.

6x18 Landis, plain.

Capital, internal, practically new.

Landis 10x24 universal.

Band saws, metal, 30" Wright, (2).

Boring mill, 12", 2 swivel heads.

Cold saw, Higley No. 114.

Compressors, 6x6, 8x8, 9x8 & 12x10.

Furnace, oil tempering.

Furnace, lead or cyanide, 16" pot.

Gear cutter, G. & E. 36".

Gear cutter, Whiton 36"x94" face.

Hammers, 40 and 50 lb. Bradley.

Hammer, Toledo, 5,000 lb. fric. brd.

24"x12' Fitchburg.

26"x12' Fay & Scott.

12"x3' Precision tool room, (5).

24"—48"x16' Rahn-Larmon, geo.

No. 3 Rivett precision, & attach.

8"x60" Fitchburg Lo-Swing.

10" S. & K. hand screw mches., (3).

11" Tilted turret hand screw mche.

2x24 & 3x36 J. & L. dbl. equipment.

11" Hartford single spindle auto.

No. 52 National Acme, (2).

36"x36"x16" Pond planer.

48"x48"x16. Bement, 2 heads.

60"x60"x17" Betts, double head.

84"x84"x32" Putnam, 4 heads.

Covington, 10' 6" between housing.

No. 24 Robinson, 2000 lb., o. b. i.

No. 35 Niagara, Stiles type, (4).

Nos. 1 & 2 Consolidated, o. b. i.

44" Morris plain, gr. box drive, new.

4" Bickford plain, gear box drive.

3" Bickford plain, cone driven.

Quint 6-hole turret drill.

No. 14 B. & S. plain.

No. 2 H Brown & Sharpe plain.

Owen duplex, 44"x74" table, (6).

Briggs type "A" high duty, 24x8 table.

Pratt & Whitney hand miller.

Litter 10x20 universal.

Cutter, reamer and tool, new.

Cincinnati cutter and tool.

Hammer, Canton Fdry. 6,000 lb. bk.

grd. drop.

Motor, 75 h. p., 220 volt, 3 phase.

Pipe machines, 4, 6 and 12".

Pulley lathe, 60" Stevens.

Punch and shear, single 4"x4".

Pump, Gould triplex 7"x8".

Shear, 8' & 10' for 10 gauge.

Shear, 10' 6" Covington 3/32" plate.

GRINDERS.

MISCELLANEOUS.

SECOND-HAND MACHINERY

FOR SALE BY

Frank H. Parker Company, First Nat'l Bank Bldg., Chicago, Ill.

BORING MILLS.

36" Bullard, 2 hds.....	\$2500.	60" Colburn, 2 hds.....	\$4000.
34" Colburn, 1 hd.....	1500.	48" Car wheel and crane.....	700.
42" Niles, 2 hds.....	3600.	30" Bullard, swivel hd.....	1800.

BENDING ROLLS.

8' Bertsch, $\frac{1}{2}$ " capacity.....	\$2000.	5' hand, 5" rollers.....	\$ 150.
7' All steel rolls $\frac{1}{2}$ " capacity.....	1000.	4' power, 5" rollers.....	250.
10' Kling, $\frac{1}{2}$ " capacity.....	2500.	7' power, 7" rollers.....	1000.

DRILL PRESSES.

Baker No. 310, nearly new, (2), each.....	\$ 500.	Leland Gifford, h. s. (2) each.....	\$325.
38" b. g., s. h., old machine.....	300.	4 spindle hole hog.....	500.
Rockford 24", 2 sp., s. h., b. g.....	700.	42" Barnes, s. h., b. g.....	700.
Prentice 28", s. h., b. g.....	400.	Footo-Burt 24", s. h., b. g., 2 hds.....	700.
Hoefler 24", s. h., b. g.....	325.	16" Hoefler, b. g., square base.....	75.
Radial, 42" Drees.....	11000.	3' Prentice radial & tapper.....	900.

GRINDERS.

9" Heald, magnetic chuck.....	\$350.	No. 65 Heald cylinder, new.....	\$2700.
18" Gorton double disc.....	700.	No. 1 Besly, 12" disc.....	200.

HAMMERS.

250 lb. Morgan steam.....	\$ 250.	800 lb. steam drop.....	\$1500.
600 lb. Morgan steam.....	600.	600 lb. Merrill board drop.....	600.
2500 lb. Bliss board drop.....	2600.	600 lb. Massillon steam.....	1200.
400 lb. Drop crank lift.....	500.	W. W. No. 55 tire welding.....	500.

LATHES.

17"x10' LeBlond tool room.....	\$ 900.	24"x 8' Advance, q. c. g.....	\$1000.
18"x 8' Fitchburg, s. s., p. r.,.....	200.	24"x10' New Haven, c. r., s. s.....	500.
18"x 8' Hamilton, s. q. c., (4) ea.....	1000.	24"x13' New Haven, c. r., s. s.....	500.
18"x14' Star, p. r., s. s.....	300.	26"x10' Walcott, q. c. g.....	1500.
20"x 6' Putman, p. r., h. s.....	200.	28"x15' New Haven, c. r., s. s.....	500.
20"x 6' Bradford, c. r., h. s.....	700.	28"x16' Fifield, c. r., s. s.....	600.
20"x10' Blaisdell c. r., s. s.....	300.	30"x22' Johnson, d. b. g., t. a.....	1800.
22"x 8' Davenport, c. r., h. s.....	850.	32"x14' New York, c. r., s. s.....	700.
22"x 9' Draper, c. r., h. s.....	600.	36"x15' Putman, c. r., s. s., t. a.....	900.
22"x10' Reed, d. b. g., q. c. g.....	900.	64"x 8' pulley lathe, d. b. g.....	500.

MILLING MACHINES.

Pedrick & Ayer, table 14x52.....	\$ 700.	No. 3 Cincinnati plain.....	\$1250.
Cincinnati No. 4 plain.....	1300.	No. 2 Rockford universal.....	1800.
Slab, 48"x11' Ingersoll.....	4000.	No. 2 American universal.....	900.
Cincinnati No. 3 universal.....	1400.	No. 2 Becker vert., (4) each.....	650.
P. & W. universal, 5x28 table.....	600.	24 Hendey Lincoln, q. c. g. (16).....	325.

PLANERS.

18"x18"x 8' P. & W., 1 hd.....	\$ 550.	36"x36"x14' Grey, two heads.....	\$ 3200.
24"x24"x 5' New Haven, 1 hd.....	600.	40"x40"x14' P. & W., 4 heads.....	5000.
24"x24"x 8' P. & W., 1 head.....	900.	48"x48"x30' Putnam, 2 heads.....	10000.
30"x30"x 6' N. H., 1 head.....	500.	58"x48"x21', 1 head.....	

PUNCH PRESSES.

P. & W. No. 2 trimming, (11) ea.....	\$ 700.	No. 20 Bliss inclinable.....	\$ 550.
W. & W. No. 14 $\frac{1}{2}$ " in 1".....	1500.	No. 32 Toledo straight back.....	700.
Ferracute No. 2-C inclinable.....	400.	No. 16 Bliss, horning.....	400.
American Can No. 4-P.....	700.	Cleveland 18", $\frac{1}{2}$ " in $\frac{1}{2}$ ".....	800.

SHEARS.

No. 2 Allegator, cuts 24" rnd.....	\$1100.	36" Niagara No. 336, $\frac{1}{2}$ ".....	\$ 900.
No. 60 Quickwork, 1" stock.....	6500.	48" Bertsch, foot power, 18 ga.....	300.
36" power square, 15" gap, $\frac{1}{2}$ ".....	700.	6' Niagara, 14 gauge.....	700.
Adriance slitting.....	450.	Double end rotary, 5/16".....	800.

SHAPERS.

15" Steptoe crank.....	\$ 500.	24" Potter & Johnston crank.....	\$1000.
14" Barker crank.....	300.	24" Walcott friction.....	400.
18" Steptoe friction.....	300.	26" Steptoe friction.....	400.

MISCELLANEOUS.

Bolt cutter, 3" Landis.....	\$1300.	Profiler, No. 3 Garvin, new.....	\$ 550.
Bulldozer, W. W. No. 9.....	8000.	Spoke riveter, W. W. No. 2.....	900.
Pipe cutter, Forbes 1" to 4".....	200.	Welder, Thomson, big outfit.....	5000.

SECOND-HAND MACHINERY

FOR SALE BY

E. B. Stickley Machinery Co.

Goebel Bldg., Detroit, Mich.

Drill press, 1x6 Baker Brothers vertical automatic.
Drill press, 5-spindle Grant type, horizontal automatic.
Drill press, No. 13-D Moline, hv. duty
Gear generators, Gleasons, 18" (2).
Gear generators, Bilgrams, 16" (2).
Gear machines, Fellows, 36", for spurs, (3).
Gear machine, No. 2 B Newark, 24", for spurs and bevels.
Grinders, 16x48 Landis crankshaft, self contained (2).

Grinder, No. 23 Brown & Sharpe, for cylinders.
Grinder, No. 4 Gardner double end, ring wheel.
Grinder, No. 2 Landis, internal.
Grinder, 12x42 Landis, plain.
Grinder, No. 1 Diamond surface, capacity 24x12x12.
Turret lathes, Steine 24", single pulley drive, (3).
Turret lathes, No. 24 G. G. Prentice, 4-spindle semi-automatic (2).
Turret lathe, Walcott 20x8'.

FOR SALE BY

Herman L. Winterer,

949-53 N. Front St., Philadelphia, Pa.

LATHES.

42"x26" Putnam.
32"x13" Pittsburgh, d. b. g., q. c. g.
31"x14" Niles.
28"x10" Niles, d. b. g., q. c. g., (2).
27"x12" Bridgeford, d. b. g., q. c. g., (2).
26"x11" Wickes, d. b. g., semi-q. c. g.
25 1/2"x26" Johnson.
23"x10" Davis, d. b. g., q. c. g.

22"x8" Hamilton, d. b. g., semi-q. c. g., (2).
21 1/2"x8" LeBlond.
20"x8 1/2" Walcott, d. b. g., q. c. g., (2).
19"x10" Draper, patent head.
18"x7" Chard, d. b. g., semi-q. c. g.
And many others.

TURRET LATHES.

28" Pond, triangle.
Potter & Johnson, universal, 21" swing x 5' bed.
3x36" Jones & Lamson.
2x24" Jones & Lamson.
7"x14" Potter & J. semi-auto., (2).

No. 4 Warner & Swasey, Fox attach.
No. 23 Garvin Monitor.
No. 3 Bardons & Oliver, (2).
1 1/2" h. s., 11" swing, Foster.
18"x6" Fay & Scott, universal.
And many others.

DRILL PRESSES.

48" Universal radial.
42" Economy radial.
40" Barnes horizontal radials, (2).
36" Bickford radials, circular base, m. d., (2).
24" Barnes, geared head.

20" Barnes, geared head, (2).
18" 4-spd. adjust. Foote-Burt, (2).
12" 6-spindle Allen sensitive.
Plain drills, all sizes.
Drill presses, assorted sizes.

MILLING MACHINES.

38"x6" Ingersoll horizontal slab.
No. 5 Cincinnati, table 9'x50 1/2".
No. 15 Garvin, table 12x41 1/2".
No. 15 Garvin, table 12x42".
No. 3 Becker Brainard, table 12x40".
No. 3 Garvin hand, horizontal.

Brown & Sharpe, 4"x28" universal table.
12" Leland-Gifford vert. routing, (2).
Whitney hand miller.
And many others.

MISCELLANEOUS.

Boring mill, 38" Beaman & Smith.
Boring mill, 31" Newton car wheel.
Boring mill, 60" Newton car wheel.
Grinder, disc, No. 17 Besly.
Grinder, 12x25" Bath universal tool and cutter.
Hammer, 400 lb. Merrill board drop, with Peck lift.
Hammer, 100 lb. Merrill upright.
Hammer, 60 lb. Bradley helve.
Hammers, 60 lb. Belle, upright (2).

Keyseater, 24" stroke Baker Bros.
Keyseaters, 18" stroke, Morton, (2).
Planer, 24"x6" American.
Punch & shear, Industrial Wks. d.e., capacity 1/2" in 1/2", squaring 1/2"x8".
Punch presses, all sizes.
Riveter, 8 1/2" Wood hydr. gap.
Rolls, Kling angle bending, cap. 1/2".
Shaper, 15" Hendey.
Shaper, 24" Warren.
Slotter, 14" Niles vertical.

Large assortment of General Machinery.

Send for complete list.

SECOND-HAND MACHINERY

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

- | | |
|---|---|
| 15"x 6' Sidney, c. r., 4-step cone. | 20"x10' Prentice Bros., c. r., g. h. |
| 16"x 6' Hamilton, c. r. & t. a., std. pat. | 20"x10' Boye & Emmes, c. r., 3-step cone. |
| 16"x 8' Lodge & Shipley, t. a. | 24"x10' Schumacher, Boye & Emmes, c. r., 5-step cone. |
| 17"x 8' LeBlond, 3-st. cone, hvy. duty. | 24"x14' Boye & Emmes, c. r., 3-step cone, (2). |
| 17"x 8' Mueller, c. r., 4-step cone. | 24"x22' Union Machine Co., c. r. |
| 18"x 8' Prentice Bros., c. r., g. h. | 30"x14' Schumacher & B., 4-st. cone. |
| 18"x10' LeBlond, c. r. & t. a., 5-step cone, (2). | 26" Gisholt heavy duty turret lathe. |
| 18"x10' Springfield, c. r., 5-step cone. | No. 4 Foster g. f. h. turret screw mach. |

TURRET LATHES AND SCREW MACHINES.

- | | |
|--|---|
| 14" Lodge & Davis, plain head. | No. 2-A Warner & Swasey g. h. turret lathes, (2). |
| 14" Lodge & Davis, b. g. | No. 3-A Warner & Swasey g. h. turret lathe. |
| 24" Davis turret boring and chucking lathe, with forming rest. | 2"x24' Jones & Lamson g. h. flat turret lathe. |
| 1" Garvin, b. g. | |
| 14" Garvin, g. f. h. | |
| 14" Acme screw mche., p. f. to tur., (3). | |
| 22" Lodge & Shipley heavy duty turret boring lathe. | |

AUTOMATIC SCREW MACHINES.

- | | |
|---------------------------------|-------------------------------|
| No. 1 Brown & Sharpe automatic. | 14" Cleveland full automatic. |
| 2" Hartford full automatic. | |

DRILLING MACHINES.

- | | |
|---------------------------------------|--------------------------------------|
| No. 1 Burke, bench, (2). | Single spdl. upright sensitive, (2). |
| 4 spdl. Barr, pl. bearing, sensitive. | 24" Aurora, sliding head, b. g. |

RADIAL DRILLS.

- | | |
|----------------------------------|--|
| 3' arm Gang plain, with t. a. | 5' arm Bickford cone dr. pl., with t. a. |
| 4' arm Bickford plain with t. a. | 5' arm Gang hvy. duty motor dr., t. a. |

MILLING MACHINES.

- | | |
|---|--------------------------------------|
| Bench miller on column, with c. s. | No. 15 Garvin plain, b. g., (2). |
| No. 1 Bristol hand, with c. s. | No. 5 Becker, vertical spindle. |
| No. 1 U. S. hand, 3-st. cone, c. s., (8). | No. 5 B. & S., cone dr., vert. spdl. |
| No. 1 1/2 LeBlond, b. g. plain. | No. 5 Brown & Sharpe, vert. spdl. |
| No. 13-B Brown & Sharpe plain. | No. 22 Garvin, vertical spindle. |
| No. 3-B Brown & Sharpe hvy. plain. | No. 3 Burke, bench type, hand. |

GRINDERS.

- | | |
|---|--|
| No. 10 Cochrane-Bly auto. bench saw filing machine. | American drill grinder. |
| B Standard Diamond grinder. | Rivett ball race grinder, with countershaft. |
| No. 1 Warner & Swasey, cock. | No. 2 Brown & Sharpe universal. |
| Type "DE" Hisey-Wolf internal. | No. 11 Brown & Sharpe plain. |
| No. 1 Wilmarth & M., plain surface. | Greenfield univ. cutter & reamer. |
| No. 1 Besly, disc. | No. 8-20 Bealy grinder. |
| Gisholt tool grinder. | No. 14-16 Bealy, wet ring wheel. |

HAMMERS AND RIVETERS.

- | | |
|--------------------------------------|---|
| No. 2 High speed riveting hammer. | 11 1/2" thr. Grant rivet spinning mche. |
| Coffman post pwr. dr. hammer 25 lbs. | No. 203 Grant rivet spinning mche. |
| Cady belt drop-hammer, 100 lbs. | |

METAL CUTTING TOOLS & SQUARING SHEARS.

- | | |
|---------------------------|-------------------------------------|
| Excelsior power hack saw. | Newton metal cutting cold saw. |
| 12" Burke metal cold saw. | No. 15 1/2 Higley cold saw. |
| Higley cold saw. | No. 2 Sterling power hack saws, (2) |

PUNCH PRESSES.

- No. 11 Badger, hand.

GEAR CUTTERS.

- | | |
|--------------------------------------|-----------------------------------|
| 26" No. 3 Brown & Sharpe auto., (5). | No. 13 Brown & Sharpe auto., (3). |
|--------------------------------------|-----------------------------------|

MISCELLANEOUS.

- | | |
|---|---------------------------------------|
| Boring mche., 23" swing, Star horiz. | Planer, 24"x24"x6' Pease, spur grd. |
| Broaching mche., No. 2 Lapointe. | Polishing lathes, City Machine Co. |
| Crane and Hoist, Canton No. 3. | Separator, American, oil. |
| Planer, 22"x22"x5' Whitcomb, spur geared. | Tapper, 1/2" Burke, bench. |
| | Tapper, 1/2" friction vertical bench. |

SECOND-HAND MACHINERY

FOR SALE BY

The O'Brien Machinery Co.,

119 N. Third St., Philadelphia, Pa.

Boring mill, 32" Rogers, turret hd.
Drill, Allen single spdl., high speed.
Drill, Allen 5-spindle, high speed.
Drill, Allen 6-spindle, high speed.
Drill, 16 spdl. Baush multiple spdl., capacity 16-1" holes.
Drill, Moline hvy. duty hog drills(2)
Drills, Allen 2-spdl. high speed, (5).
Hammer, 2,000 lb. United Engine Co. board drop.
Hammer, 1,000 lb. Massillon st. drop.
Lathe, 15"x9" Davis.
Lathe, 16"x6" Reed, (2).
Lathe, 8"x108" Fitchburg Lo-Swing.
Lathe, 18"x8" American.
Lathe, 20"x12" Flather.
Lathe, 24"x12" Flather.
Lathe, 27"x12" LeBlond.
Lathe, 28"x12" Hoye & Emmes.
Lathe, 36"x20" Bridgeford.
Lathe, 21"x8" LeBlond, (2).
Lathe 24"x10" National.
Lathe, 35"x18" Bement.
Miller, No. 1 Milwaukee universal, vertical attachment.
Miller, No. 3 Kempsmith universal.

Miller, No. 1 Brown & Sharpe universal, (3).
Millers, No. 3 Fosdick hand, (3).
Millers, No. 7-H Becker, Lincoln type, (5).
Millers, No. 6 Whitney, hand, (6).
Pipe machine, 2" Cox, heavy duty.
Pipe machine, 2" Williams.
Planer, 16"x16"x8" Pratt & Whitney.
Planer, 30"x30"x8" New York Safety.
Planer, 36"x36"x12" Harrington.
Planer, 30"x30"x10" Sellers.
Presses, No. 2 Toledo (12).
Presses, No. 3 Toledo (2).
Press, No. 3 Philadelphia.
Press, No. 2 Stiles.
Press, No. 1 Philadelphia.
Presses, No. 54 Toledo (10).
Radial drill, 30" Dreses, plain.
Radial drill, 30" Gang, plain.
Shaper, 32" Putnam.
Shaper, 24" Hollingworth bk. grd.
Shaper, 20" Steptoe.
Shaper, 16" Hollingworth, back grd.
Shapers, 12", 20" and 24" Juengst.
Turret lathes, No. 4 B. & O., (2).

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1001-3-5 N. Sixth St.,

St. Louis, Mo.

LATHES.

14"x 6" Hamilton, tool room, q. c.
14"x 6" LeBlond, plain change.
17"x 7" Oliver, quick change.
20"x 8" Lodge & Shipley, all g. h.
18"x19" Lodge & Shipley, with taper.
21"x10" LeBlond, heavy duty, q. c.

24"x10" Rahn & Larmon. h.duty, q. c.
25"x15" Johnson, plain change.
25"x20" Johnson, plain change.
24"x22" F. E. Reed, plain change.
34"x16" Putnam, plain change.

PLANERS.

24"x24"x 5' New Haven.
32"x32"x 8' Hewes & Phillips.

32"x32"x10' Niles, 2 heads.
36"x36"x 8' Gray, 2 heads.

DRILLING MACHINES.

26" Superior, sliding head.
24" Cincinnati, all geared.
28" Lodge & Davis.

34" heavy sliding head.
20" Baker Bros.
40" Dreses, heavy duty.

MILLING MACHINES.

No. 4 Becker, vertical.
No. 4B Becker, vertical.
No. 2 Brown & Sharpe, old style.
No. 2 Kempsmith, universal.
No. 3 Cincinnati, universal.

No. 4 Cincinnati, universal.
No. 3 LeBlond, plain.
No. 3 Owen, plain.
No. 4 Brown & Sharpe, plain.
Owen duplex miller.

GRINDERS.

No. 10 Besly disc grinder.
No. 3 Detroit, 20"x3" wheels.

12"x24" Modern plain.
10"x36" Cincinnati.

MISCELLANEOUS.

Blowers, No. 2 and No. 3 Root.
Bulldozer, No. 3 Fisher.
Exhaust fan, 72" Sturtevant.
Gear cutter, 36" Cincinnati.

Lettering machine, Noble & W.
Lettering machine, Matthews.
Screw machine, 2" Pratt & Whitney.
Screw machine, 2" Warner & Swasey.

SECOND-HAND MACHINERY

FOR SALE BY

Harris Brothers Company, 1475 W. 35th St., Chicago, Ill.
ENGINE LATHES.

Triple geared, screw cutting:

38"x14' American.

36"x17' Hamilton with taper attachment.

48"x30' Fifield, 25' center.

Screw-cutting quick change mechanism, 3-step cone, dbl. bk. grd., comp. rests:

18"x 8' Ryerson, (4).

With turrets on carriage with compound rests:

18"x 6' Canada Machy. Corp., (2). | 20"x 8' McDougall, (3).

With loose change gears, 3-step cones, dbl. back grd., and compound rests:

18"x 8' Sidney, (3). | 18"x 8' Milwaukee, (6).

With loose change gears, compound rests, single back geared:

24"x21' Fitchburg, with taper at-

18"x 6' Cincinnati.

18"x 6' Giddings & Lewis, (4).

21"x 7' Bertram.

10" Wells speed lathes, (10).

24"x12' Putnam.

26"x12' American.

Plain turning lathes with plain rests. (Not screw cutting):

16"x 6' Rockford, pan bed, (10). | 20"x 8' Simplex, (4).

With turret on carriage but without plain rest:

18"x 8' Milwaukee, (10).

All the above lathes have hollow spindles and countershafts.

DRILL PRESSES.

Colburn 25" heavy duty, high speed, No. 5 Morse taper, sgl. pulley drive, (9).
8-spindle 40" Baush adjustable multiple-spdle. drill, capacity 1" and 20" circle.

GRINDERS.

Wells Bros. cutter and reamer.

Ford Smith cylindrical grinders, (2). | $\frac{1}{2}$ h. p. Electric grinders, (5).

TURRET LATHES.

W. P. Davis 24" swing set over tur-

ret, all power feeds, (2).

| Jones & L. 3"x36" bar outfit, (3).

MILLING MACHINES.

Hendey Lincoln type Millers with quick change feed, 20" automatic feed to table, (25).

No. 2 Brown & Sharpe universal.

Ingersoll combined knee type vertical and horizontal milling machine, table

16"x58", all power feeds.

Niles-Bement-Pond No. 9 vertical milling machine with power feed, rotary table, 48" swing, 24" diam. table, weight about 8000 lbs.

Newton No. 3 vertical milling machine, power feed, rotary table.

SLOTTER, SHAPER AND PLANERS.

20" Niles vert slotter, rotary table.

| 38"x38"x12' Niles, with 2 heads.

20" P. N. A open-side shaper.

| 54"x54"x12' Niles, with 4 heads.

PUNCH PRESSES.

Williams straight sided, b. grd., sgl. action punch press, 32" between uprights.

HAMMERS.

Board lift drop hammers, 1000 lb., (2).

PUNCHES AND SHEARS.

Alligator shear for 14".

Wiener steel plate "I" beam shear for 15" "I" beam.

BENDING ROLL.

8' Lennox plate bending roll, $\frac{1}{4}$ " cap., drop end housing, friction clutch drive.

TRAVELING CRANE.

Niles electric traveling crane, 46' span, 15 ton cap., with auxiliary hoist, 5 ton, 4 motor type, 220 d. c.

Our complete Machinery Bulletin sent upon request.

SECOND-HAND MACHINERY

FOR SALE BY

McCoy-Brandt Machinery Company

Office and Warehouse, 210-218 Penn Ave., Pittsburgh, Pa.

HAMMERS.

Board drop, 2000 lb. B. & S.
Steam dr., 600, 1200, 1500 lb. Massillon.

Steam. 600, 700, 1000, 8000, 10000, 12000
and 14000 lb. double frame.

LATHES.

72"x27" New Haven, triple geared.
60"x20" Putman, triple geared.
48"x18" centers, triple geared.
38"x20" New Haven, m. d.
48" car wheel turning, m. d.
24"x12" S. B. & E., c. r., 18" chuck.

24"x10" LeBlond, q. c. g.
20"x 8" LeBlond, q. c. g., t. a.
17"x 8" Sidney, q. c. g., d. b. g.
16"x 6" LeBlond, c. r., chuck.
Speed lathes, 15" and 13", 4' bed.

PUNCHES, SHEARS AND ROLLS.

15" tht., dbl., cap. 14x1", No. 13 W.-W.
50" throat, cap. 14x1", Cincinnati.
Guillotine shear, cap. 1' & 2'.
Slitting shear, rotary, 23" tht., cap. 1'.

Slittingshear, throatless, cap. 1" plate.
Squaring shear, 26", cap. 16 ga., pwr.
Squaring shear, 10'-14 gauge, belted.
Rolls, 10' Bertsch, cap. 14" gauge.

PLANERS, MILLERS AND SHAPERS.

72"x72"x24" Niles, 4 heads.
36"x36"x10" Liberty, 2 heads.
30"x30"x10" Sellers, 2 heads.
No. 3 B. & S. univ., index head.

No. 3 Cincinnati plain.
16" Smith & Mills.
20" Steptoe crank, geared.
24" Cincinnati, crank, back grd.

MISCELLANEOUS.

Boring mill, 10'-16" Betts, 2 hds., m. d.
Bulldozers, Nos. 4 and 29-U W.-W.
Drill, 8-spindle gang, Foote-Burt.
Drill, 28" back geared, power feed.
Pipe machines, 2", 6" and 12".
Press, B. & S., 4" stroke, 9125 lbs.

Presses, Ferracute Nos. DGG-56,
D-201, and EG-6, all str. sided.
Presses, Ferracute Nos. E-56 and
E-57, toggle.
Press, double crank, Bliss, 24000 lbs.

FOR SALE BY

Frank Toomey, Inc.,

127-131 N. Third St., Philadelphia, Pa.

LATHES.

11"x 5" Myers.
13"x 5 1/2" new Carroll-Jamieson.
15"x 6" new Sidney, q. c., swings 17".
17"x 8" new Sidney, q. c., swings 19".
19"x 8" new Sidney, q. c., swings 21".
20"x 8" Whitcomb Blaisdell, q. c.

21"x 8" LeBlond, q. c.
25"x14" new Sidney, q. c., swings 21".
28"x48"14' Harrington extend. lathe.
36"x16" New Haven, quick change.
36"x22" geared head Bridgeford.
42" Pond car wheel lathe.

PLANERS.

36"x36"x 8" Gray, two heads.
40"x40"x10" Powell, two heads.
40"x40"x10" Hamilton, 4 hds., motor d.
48"x48"x14" Patch, 4 heads, arranged
for motor drive.

50"x50"x16" Pond, two heads.
50"x16" Cleveland open side, 2 heads
on cross rail, one head on side; ar-
ranged for motor drive.

SHAPERS.

14" new Steptoe.
14" Smith & Mills, new.

16" Smith & Mills, new.
20" Steptoe.

MILLING MACHINES.

No. 4 Brown & Sharpe, plain.
No. 1 1/2 new American, plain.
No. 3A Garvin, universal.
No. 6 used Whitney, hand.

No. 1 1/2 used Valley City, plain.
No. 1 new United States, hand.
No. 2 Cincinnati, plain.
No. 2 Van Norman duplex.

DRILLING MACHINES.

72" Western, full universal.
36" new Superior, sliding head.
32" new Superior, sliding head.
28" new Superior, sliding head.

25" new Superior, sliding head.
23" Barnes b. g., p. f.
1, 2 & 4 spindle, Allen.

POWER PRESSES AND HAMMERS.

No. 78 1/2 Bliss f. g.
No. 126 Max Ams.

No. 121 Max Ams.
25 lb., 50 lb. and 100 lb. hammers.

SECOND-HAND MACHINERY

FOR SALE BY

Brown-McDonald Machinery Co., 2323 N. 9th St., St. Louis, Mo.

LATHES.

- | | |
|--|---|
| 13"x 6' South Bend, c. r., h. s., new. | 20"x 10' Walcott & Wood, h. s., cpd. r., used. |
| 13"x 6' Lancaster, c. r., h. s., new. | 26"x 12' Walcott, q.c.g., d.b.g., new. |
| 15"x 8' South Bend, c. r., h. s., new. | 26"x 12' Wickes, heavy duty quick change gear, double bk. gear, with taper attachment, new. |
| 14"x 6' Walcott, q.c.g., d.b.g., new. | 14"x 6' Fitchburg, s. s., p. r., used. |
| 16"x 8' Walcott, q.c.g., d.b.g., new. | |
| 18"x 8' Walcott, q.c.g., d.b.g., new. | |
| 20"x 10' Walcott, q.c.g., d.b.g., new. | |

DRILLING MACHINES.

- | | |
|---|---------------------------------------|
| No. 1 Burke, bench, with chucks, new. | 14" Excelsior, 2 tables, new. |
| 4" Leland Gifford, high speed, with pump. | 20" Champion, s. b., w. & l., new. |
| | 20" Champion, s.b., b.g. & p.f., new. |
| | 26" Aurora, b. g., p. l., new. |

SHAPERS.

- | | |
|-------------------------------|---|
| 16" Whipp, single gear, new. | Rhodes Nos. 1 and 3 horizontal and vertical, new. |
| 16" & 24" Hollingsworth, new. | |
| 24" Gould & Eberhardt, used. | |

SCREW MACHINES.

- No. 4 Smurr & Kamen, geared friction head, p. f. to turret, new.
No. 4 Defiance, geared friction head, p. f. to turret, used.
No. 52 National Acme automatic, used.

MILLING MACHINES.

- No. 2 American Lincoln, b. g., new.
No. 1 U. S. hand, vise and arbor, new.
No. 2 Pratt & Whitney, Lincoln type used.

PRESSES.

- | | |
|--------------------------------------|-----------------------------------|
| No. 1 Loshbough-Jordan, o.b.i., new. | No. 2 Greenerd, arbor, used, (6). |
| No. 1 Greenerd, arbor, used, (9). | |

SAWS.

- | | |
|-----------------------------------|--------------------------|
| Nos. 1 & 2 Marvel, draw cut, new. | Williamson, metal, used. |
|-----------------------------------|--------------------------|

GRINDERS.

- | | |
|--|---------------------------------------|
| Nos. 1, 2 & 3 Western, d. e., new. | Essley, cylindrical. |
| Nos. 1, 2 & 3 St. Louis, d. e., new. | No. 190 Wells, reamer & cutter, new. |
| No. 20 Safety E. W. Co., elec. (4). | Greenfield univ. tool & cutter, used. |
| U. S., electric, 110 v., d. c., bench. | Nos. 2 American, surface, new. |

COMPRESSORS.

- Nos. 2, 3 & 4 Model B, vertical, belted, new.

HAMMERS.

- 800 lb. Lane, double frame, steam forging, drop, used.
1000 lb. Chambersburg, double frame, steam forging, drop, used.
1200 lb. Chambersburg, double frame, steam forging, drop, used.
No. 50 Star trip hammer, new.

MISCELLANEOUS.

- | | |
|---|--|
| Brakes. 6 & 8', steel, new. | Pipe cutter, B. & K., 4" cap. |
| Bolt threader, No. 734 Greenfield, new. | Pipe mch., No. 56 Forbes, 4", used. |
| Bolt threader, 1" Acme, sgl., used. | Pipe machine, No. 76 Forbes, 3", used. |
| Filing mche., No. 2 Cochran-B. used. | Pipe machine, 3" Borden, hand. |
| Motor, 5 h. p. General Electric, 3 ph., new. | Planer, 36"x36"x15' Patch, o. s., 1 hd. on cross rail, 1 head on side, used. |
| Motor, 10 h. p. General Electric, 3 ph., new. | Punch & riveter, wt. 16000 lbs. 5' tht. |
| Motor, 1 h. p. Advance, sgl. ph., new. | No. 3 Hilles & Jones, stake, used. |
| | Large stock of tinners' tools. |

CHUCKS.

- | | |
|--|---------------------------------------|
| 8-12-14-16" 4-jaw Sweetland, independent, new. | 5" & 9" 3-jaw Sweetland, scroll, new. |
|--|---------------------------------------|

SECOND-HAND MACHINERY

FOR SALE BY

B. C. Allen Machinery Co.,

104 S. Clinton St., Chicago

Air compressor, 4"x4".....	\$ 35.
Arbor press, Perfection.....	150.
Cock grinder.....	75.
Die grinder.....	80.
Drill press, Barnes friction.....	40.
Drill press, Burke bench.....	25.
Drill press, 20".....	100.
Drill press, 30" b. g. p. f.....	135.
Drill press, 20" heavy duty.....	200.
Drill press, Barnes 3-spd.....	200.
Emery grinders, Nos. 1, 2, 3 & 4	
Lathe, 11"x8' Myers.....	275.
Lathe, 14"x8' Goddard.....	285.
Lathe, 15"x8' taper attach.....	375.
Lathe, 16"x8' Walcott.....	400.
Lathe, 18"x7' Chard, hvy. duty	725.
Lathe, 36"x16' Putnam.....	1000.
Miller, No. 5 Burke, hand.....	250.
Miller, Milwaukee, hand.....	250.
Miller, double end valve.....	125.

Miller, Steptoe, hand.....	\$ 400.
Miller, No. 5, vertical att.....	1500.
Pipe mche., 2" Landis head.....	225.
Pipe mach., 2" Bignall & K.....	175.
Press, foot.....	35.
Punch press, No. 1 1/2 Consol.....	225.
Punch press, No. 2-P Ferracute	475.
Punch press, No. 31 Toledo,	
solid back.....	165.
Punch press, bench.....	85.
Punch & shear, 1 1/2"x1".....	350.
Punch & shear, 1 1/2"x1".....	450.
Punch & shear, 18" thr., 1"x1".....	1200.
Roll, bending, top 9" dia.....	925.
Screw machine, 1" P. & W.....	225.
Shear, serpentine, 18 ga.....	45.
Shear, square, 8' foot power.....	275.
Tinners rollers.....	
Wet grinder.....	40.

FOR SALE BY

Chas. Molitor Machinery Co.,

124 S. Clinton St., Chicago, Ill.

LATHES.

36"x12' Niles Bement.
26"x12' Putnam, heavy duty, qu. ch.
36"x14' Putnam.
22"x10' Davis, quick change.
22"x 8' Hamilton, semi qu. ch.
18"x 8' Monarch, qu. change.

18" Gisholt production.
16"x 6' Prentice.
16"x 6' Cincinnati, semi-qu. ch.
16"x 6' Reed.
14"x 6' LeBlond.
8' & 13' Lo-Swing.

PLANERS AND SHAPERS.

24"x24"x6' Pond, 2 heads.
20" Gould & Eberhardt, crank, b. g.

1" Gould & Eberhardt.
14" Steptoe, crank.

MILLING MACHINES.

No. 3 Brown & Sharpe universal.
No. 2A heavy B. & S. universal.
No. 4 Cincinnati plain.
No. 3 Cincinnati plain.
No. 2 B. & S. plain.

No. 2 Garvin universal.
No. 1 Kearney & Trecker plain.
No. 1 1/2 Rockford univ., slotting and vertical attachment.
Small hand and power millers.

PUNCH PRESSES AND HAMMERS.

Long & Allstatter b. g.
Crosby & Adrian, arch.
Waterbury Farrel, 14" stroke.

600 lb. Williams-White, drop.
500 lb. Massillon, steam.
60 lb. Bradley, helve.

SCREW MACHINES AND TURRET LATHES.

22" Greenlee, (4).
1 1/2" Acme, (2).
3" Jones & Lamson, (2).
No. 3 Warner & Swasey.

16" Gisholt special, heavy.
24" Libby.
1" Smurr & Kamen.
2" Pratt & Whitney.

GRINDERS.

Bath, Fitchburg universal, (2).
32"x12" Landis, plain, (2).

30"x10" Landis plain, (3).
No. 2 B. & S. universal.

DRILL PRESSES.

4' Bickford radial.
24" Aurora, slid. hd., tapp. att.
9-spindle, Pratt & Whitney, gang.
3 spindle, Foote-Burt, 1" cap.

22" Kokomo, slid. hd., tapp. att.
4 spindle Turner, turret att.
1" and 1" Henry-Wright.
25" heavy Foote-Burt, 3" cap.

MISCELLANEOUS.

Bolt cutters, 3" and 1 1/2" Acme.
Brake, Robinson 5' 14 ga. ft. attach.
Cutter, 48" Gould & Eberhardt.

Nut tapper, 4-spindle Acme.
Rivet spinners, Schuster, 3/16"-1/4".
Square shear, 10' Niagara, 18 ga., ft. p.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Co., Inc., 28th St. & A. V. R. R., Pittsburgh, Pa.

LATHES.

27"x12' Pittsburgh, dbl. b. g.	16"x 8' Shellenbach, t. a.
26"x20' 6" Putnam, b. g., c. r.	16"x 6' Cleveland, h. s., t. a.
26"x12' Boye & Emmes, q. c. g. d. b. g.	16"x 6' Hendey, q. c. g., tie bar.
26"x10' 6" Walcott, q. c. g.	16"x 6' Prentice, h. s.
24"x16' 6" Johnson lathe.	15"x 6' South Bend, c. r., h. s.
24"x12' Boye & Emmes, q. c. g. d. b. g.	14"x 6' Hendey, q. c. g.
24"x12' Ames, b. g., c. r.	14"x 6' LeBlond.
22"x12' Greaves & Klusman, quick change gears, double back gears.	14"x 6' Ames, hollow spindle.
19"x10' Wright & Smith.	14"x 5' American speed lathe.
19"x10' LeBlond, motor drive.	24"x11' American semi-auto. turret.
18"x10' Mueller, q. c. g., m. d.	22"x 8' Bullard turret lathe.
19"x 8' Mueller, q. c. g., heavy duty.	15"x 5' American brass finishers'.
	Speed lathes, various sizes, (10).

PLANERS AND SHAPERS.

43"x48"x14' Powell planers, 4 hds.	16" Cincinnati b. g. cr. shaper.
72"x56"x12' Betts planer, 2 heads.	20" Smith & Mills, b. g. cr. shaper.
15" Pratt & Whitney, b. g. shaper.	20" G. & E. b. g. crank shaper.
16" Walcott geared rack shaper.	26" G. & E. sgl. grd. crank shaper.
16" Lodge & Davis shaper.	26" Smith & Silk rack shaper.

DRILLS AND BORING MILLS.

Burke sensitive bench Nos. 0 & 1.	28" and 32" Cleveland, b. g. drills.
14" Rockford sensitive drill.	3' and 6' Prentice radial drills, t. a.
12" Fulton sensitive bench drill.	Garvin 4 spindle drill press.
No. 3 Prentice port. rope drive drills.	36" Bridgeport boring mill.
20" Silver, new, plain and bk. gd.	36" Niles boring mill, 2 heads.
20" Foote-Burt mfrs. vertical.	42" Bullard boring mill, 2 heads.
20" Barnes plain drill.	48" Colburn boring mill, 2 heads.
21" and 32" Kern b. g. drills.	60" Niles boring mill, 2 heads.
24" and 38" New Haven drills.	10'-16' Betts boring mill, 2 heads.
24" and 40" Aurora, b. g. drills.	Niles 14 boring mill, 2 heads.

PUNCHES, SHEARS, PRESSES AND ROLLS.

Fischer Pitman alligator shear, 24" knife, cap. about 4" sq. s. s.	18" throat Rees s. e. shear.
Garrison geared power square shear, 48"x14".	No. 3-A Royersford single end punch and shears.
50" throat Reade sgl. end punch and shear; massive construction.	Hand splitting shear, 1 1/2".
18" throat Rees s. e. punch.	No. 56 dbl. housing knuckle press.
	Straight-side punch press, 1" str.
	30-ton Lorie hyd. arbor press.

MILLING MACHINES.

No. 2 LeBlond, universal.	No. 3 LeBlond plain.
No. 2 1/2 LeBlond, plain.	Bilton milling machine.

MISCELLANEOUS.

Air compressor, No. 0 Au-To 3"x14".	Fan, Sturtevant No. 31, exhaust.
Air comp., Ing.-Sargeant 10"x12.	Grinders, Plymouth Nos. 13, 14, 17.
Bender, Wallace No. 11 angle, hd. pr.	Grinder, 10" dbl. e. emery on column.
Blower, Root No. 3 Acme, hand.	Grinder, Barnes 20" wet tool.
Blowers, Buffalo Nos. 6, 8, 9 and 10.	Grinder, 20" Ransom w. t., 250 v., d. c.
Blower, Sturtevant Nos. 0, 7.	Hammer, Massillon 100-lb.
Blower, Sturtevant, No. 4 Monogram.	Hammer, Lane 1100 lb., s. l. steam.
Boring mch., Binsse, No. 2 hor.	Metal lockers, 10 sections.
Brazing table, all iron, 17"x29 1/2"x31".	Pipe machine, E. C. & B. 2 1/2 to 3".
Chain belt, 16"x8"x1 1/2" p. and gear.	Polishing stand, Diamond No. 2.
Cold saw, Gliem, 22" diam. 6" cap.	Polishing stand, d. end, 42"x1" arbor.
Crane, 10" I-beam, 12'3" span, with Harrington 6,000 lb. chain hoist.	Polishing stand, Cuyahoga dbl. end.
Crimping machine for short work.	Slotter, 14" Niles. 30" rotary table.
Engine, Lane, 15 h. p. steam.	Tapping machine, No. 2 Garvin.
	Vises, Forges, Pumps, Tanks.

SECOND-HAND MACHINERY

FOR SALE BY

Reliance Machinery Sales Co., 114 West Park Way, Pittsburgh, Pa.

Bolt cutter, 5/8" Acme, dbl. head.
Boring mill, 30" Niles, 2 heads, m. d.
Drill, 24" Aurora, sliding head.
Drills, 20" Silver, new, (6).
Drills, 16" Canedy-Otto, new, (3).
Drills, 14" U. S. sensitive, new (3).
Grinder, No. 70 Heald.
Grinder, No. 3 B. & S. univ. cutter & r.
Grinders, Yankee drill, all sizes, new.
Hammers, 40 lb. Bradley cushion helve (2).
Hammer, 60 lb. Bradley cushion helve.
Lathe, 13"x4' South Bend, pl. ch., c. r.
Lathe, 16"x6' Blaisdell, pl. ch. c. r.

Lathe, 18"x6' Brass, Fox type.
Lathe, 18"x8' Hamilton, pl. ch. c. r.
Lathe, 18"x8' Prentice, pl. ch. c. r.
Lathes, 36"x14' Pond, gr. hd. m. d.
Lathes, 18", 22" and 26" Libby.
Miller, No. 1 U. S., hand, new.
Miller, No. 1 1/2 American plain, new.
Presses, Willard Nos. 3-A and 4-A, new.
Press, Loshbough-J. No. 4, new.
Seamer, No. 3 Bliss plain, double
Shear, Schatz triple combination punch and shear, capacity 1"x4".
Shear, Schatz triple combination punch and shear, capacity 1"x1".

FOR SALE BY

A. M. Stoehr,

Bending roll, 7' power steel rolls.
5/16" capacity.
Brake, 11' power, 3/4" capacity.
Car wheel borer, 48" Bement.
Drill, No. 2 Little Giant, air.
Drill, No. 25 Foote - Burt, 3" cap.
Drill, 42" Davis, back geared.
Hammer, Ingersoll, air.
Hammer, 250 lb. Bradley, helve.
Hammer, 600 lb. Merrill, drop.
Lathes, 18"x8' and 10' Cisco.
Lathe, 18"x10' Hamilton.

512 N. LaSalle St., Chicago, Ill.

Milling machine, No. 5 plain b. g.
Planers, 30 x 8 & 30 x 18.
Punch presses, Nos. 2, 3 & 4.
Punch and shear, 1/2" through 1/2".
Punch & shear, New Doty comb.
Punch & shear, No. 14 W. & W.
Riveting machines, Schuster.
Screw mches., P. & W., auto. 1" cap.
Sprue cutter, geared.
Trimming press, No. 2 P. & W.
Wire straightener.

FOR SALE BY

Bauschke Machinery Company,

Cleveland, Ohio.

MILLING MACHINES.

Milwaukee No. 1 1/2 A. plain, with vertical attachment.
Garvin No. 1 1/2, hand.
Pratt-Whitney No. 3, die sink, swivel vise, countershaft.

Cinc. No. 2 pl. cone type, old style.
B. & S. No. 60, hand, pump & tank.
Blake & Johnson No. 4, 10" x 26" table, with countershaft.

GRINDERS

Cincinnati No. 1 univ. tool.
Capitol ind. grinder, with int. head, 3 jaw chuck, countershaft.
Besly No. 10 double-end disc, with gluing press and countershaft.

Landis No. 2 universal.
Besly No. 19-34" horiz. disc, with exhaust fan, 7 chain motor dr., with 15 h.p. Wagner induction type b.p. motor and starter.

TURRET LATHES.

Gisholt 22" bar feed.
J. & L. 3"x24", (6).
J. & L. 3"x36" double spindle.

Potter & Johnston 5A, (4).
J. & L. 3"x36" single spindle, (6).

ENGINE LATHES.

12"x5' Hendy, quick change gear, 2-jaw chuck.
17"x6' LeBlond, (2).

14"x6' Monarch, change gear, c. s.
16"x6' Cincinnati, d. b. g., quick change feed, countershaft, (5).

GEAR CUTTERS.

Fellows 36" gear shapers, (5).
Cincinnati No. 3 gear cutter.
LaPointe No. 3 broaching machine.

Flather No. 3 gear cutter.
Cincinnati 3A, gear cutter.
Pangborn sand blast system No. 6.

PLANER.

34"x24"x5' Gray planer, one head on cross rail.

SECOND-HAND MACHINERY

FOR SALE BY

Stocker-Rumely-Wachs Co.,

117-121 N. Jefferson St., Chicago

In stock for immediate delivery.

BORING MILLS.

24" Bullard vertical, chuck in table.

42" Gisholt, 2 heads, chuck in table.

60" Bullard, 2 plain heads.

No. 2 Rockford horizontal.

DRILLING MACHINES.

12" Leland Gifford, h. s., ball bearing, single spindle.

Henry & Wright, h. s., ball bearing, single spindle, class B

Henry & Wright, h. s., ball bearing, six spindle.

Allen, h. s., ball bearing, four spindle.

Allen, h. s., ball bearing, six spindle.

6' Gang radial drill.

6' Prentice radial drill.

GEAR CUTTERS.

No. 3 26" Brown & Sharpe.

30"x3' Gould & Eberhardt.

8" Gleason automatic gear cutter.

GRINDERS.

No. 1 LeBlond cutter and tool grinder.

No. 1 Cincinnati cutter and tool grinder.

No. 12 Brown & Sharpe universal grinder.

No. 1 Brown & Sharpe universal grinder.

6"x32" Norton grinder.

8"x40" Morse grinder.

No. 12 Modern grinder.

No. 10 Besly disc grinder.

8" Heald piston ring grinder.

LATHES.

20"x10' Hamilton, double back gear, compound rest.

14"x 6' Bradford, double back gear, taper attachment.

16"x 8' Hamilton, q. c. g., taper, relieving, pan bed.

16"x 8' Bradford, double back gear, compound rest.

22"x10' Bradford, double back gear.

30"x12' Blaisdell, compound rest.

32"x18' Bradford, compound rest.

37"x18' Fifeild, compound rest.

MILLING MACHINES.

No. 3 Burke hand miller.

No. 0 Rockford plain miller.

No. 2 LeBlond plain miller.

No. 5 Hendey, Lincoln type miller.

No. 2 Brown & Sharpe vertical miller.

No. 13 Brown & Sharpe miller.

No. 5 Brown & Sharpe plain miller.

SCREW MACHINES.

No. 9 Bardons & Oliver, friction head, automatic chuck and wire feed, power feed to turret.

No. 0 Foster, plain head, automatic chuck and wire feed.

No. 1 Foster, plain head, automatic chuck and wire feed.

No. 2 Foster, plain head, automatic chuck and wire feed.

No. 10 Foster, geared friction head, automatic chuck and wire feed, power feed to turret slide.

24" Gisholt turret lathe.

2"x24" Jones & Lamson turret lathe.

3"x36" Jones & Lamson turret lathe.

Potter & Johnston turret lathe.

24" Cleveland, automatic.

No. 2A Warner & Swasey turret lathe.

MISCELLANEOUS.

Slotter, 18" Canadian Machinery Corp.

Shop saw, No. 5 Marvel.

Miller, 24"x20"x8' Ingersoll horizontal, arranged for motor drive, new.

SECOND-HAND MACHINERY

FOR SALE BY

Tubor, Velick & Co.,

Brake and folder, 42" Niagara.
Drill presses, 20", (3).
Drill presses, friction, (2).
Grinders, disc, Brown & Sharpe, (3).
Groover and seamer, 10' Niagara.
Hammer, 60 lb. Bradley.
Hammers, 160 lb. drop, (2).
Lathes, 18"x7' Chard, semi q. c., (4).
Lathe, 18"x8' and 22"x10' Cisco, q. c.
Miller, No. 24 Hendey, Lincoln type,
quick change.

Grinders and tinners' rolls of all sizes.

631 W. Lake St., Chicago, Ill.

Millers, hand, U. S., (4).
Motors, all sizes 1/2 to 50 h. p.
Press, horn, No. 16 Bliss.
Press, drawing, No. 34 Toledo.
Punch presses, No. 4 Boxingdale, (4).
Screw machine, 14" Smurr & Kamen,
friction head.
Shaper, 16" Hendey, friction.
Shaper, 16" American, crank.
Shaper, 30" Cincinnati b. g. crank.
Tumbling barrel.

Pulleys, belting and hangers, all sizes.

FOR SALE BY

H. D. Warner,

Air compressors, Chicago Pneumatic, 750 cu. ft. capacity, (2).
Automatic, 14" Cleveland.
Automatic, 24" Cleveland.
Automatics, 34" Cleveland, (2).
Automatic, 44" Cleveland.
Automatics, 24" Gridley sgl. s., (20).
Automatic, 34" Gridley single-spdl.
Automatics, 24" Gridley mult-sp., (5).
Bulldozer, No. 4 W. & W.
Car wheel boring and turning machines, Niles 42".
Chuck machine, No. 6 W. & S., chasing attachment.
Chuck machine, No. 23 New Britain.
Drill press, 3-spindle.

57 May St., Hartford, Conn.

Grinder, Bath universal.
Hammer, 800-lb. B. & S., board.
Hammer, 1000-lb. B. & S., board.
Hammers, 1200-lb. Niles, steam, (2).
Milling machines, No. 2 P. & W. Lincoln type, (5).
Milling machines, No. 12 P. & W. Lincoln type, (6).
Milling machines, 12" light P. & W. automatic, (20).
Planer, 36"x12' Chandler.
Press, No. 594 Toledo reducing.
Press, No. 58 Toledo, back-geared.
Press, No. 204-B Toledo, bk.-geared.
Turret lathe, P. & W.

FOR SALE BY

E. L. Esley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

DRILL PRESSES.

24" No. 25 Foote-Burt hvy. duty.
22" G. & E. sliding head, (6).

20", 4 sp. Barnes gang drill.
No. 2-D 24" Minster, heavy duty.

LATHES.

13"x5' Fairbanks Co.
14"x6' Monarch.
16"x 8' Von Wyck, taper att.
17"x 6' LeBlond heavy duty.
18"x 8' Bradford, q. c. g., taper att.

20"x 8' Hamilton.
20"x10' LeBlond, q. c. g.
22"x12' Greaves-Klusman.
24"x12' Prentice Bros.
32"x24' Fay & Scott.

MISCELLANEOUS.

Broaching machine, No. 2 Lapointe.
Broaching machine, No. 3 Lapointe.
Gear cutter, No. 3 B. & S. auto.
Grinder, No. 1 Cinc. Univ. C. & R.
Grinder, disc, No. 14 Gardner.
Hammer, steam, 800 lb. Massillon.
Keyseat miller, No. 6 Burr.
Miller, Hendey, Lincoln type.
Miller, No. 2 Kearney & T. plain.
Millers, No. 3 B. & S. univ.
Miller, No. 1 Beaman & S. slab.
Planer, 32"x32"x8' New Haven.

Planer, 32"x32"x12' Davis & Egan.
Planer, 42"x42"x8' Whitcomb.
Saw, Smith & Post cold saw.
Screw mach., No. 1 Garvin, pl. hd.
Screw mach., No. 3 Foster, pl. hd.
Screw mach., No. 4 Foster, pl. hd.
Shaper, 16" Smith & Mills crank.
Turret lathe, 2"x24" J. & L.
Turret lathe, No. 2 Pratt & W.
Turret lathe, 18"x6' Fulton.
Turret lathe, 3x26" Jones & L.
Turret lathe, 24" Conradson.

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company.

111 Broadway, New York

Located at our various factories and stores.

LATHES.

15"x 7' P. & W. speed lathe.	28"x18' Niles, c. r.
18"x 8' LeBlond, quick change.	28"x30' Niles, c. r.
21"x8' LeBlond, geared head, heavy duty.	36"x14' Niles, c. r.
22"x 8' Niles, c. r.	42"x20' Niles, c. r.
26"x26' Niles, c. r.	48"x30' Niles, c. r.
	50" Niles pulley lathe.

TURRET LATHES.

No. 6A Potter & Johnston automatic, motor drive.
2"x24" Jones & Lamson, cone head.
2"x26" Pratt & Whitney turret lathe.
28" size J. Gisholt, 3 $\frac{1}{2}$ " spindle.
24" size I Gisholt, 220 volt, motor drive, d. c.
28" Milwaukee rigid.
34" size K Gisholt.

SHAPERS AND PLANERS.

20" G. & E. crank shaper.	42"x42"x14' Pond, 3 heads.
30"x30"x 6' Pond, 2 heads.	44"x44"x20' Niles, 4 heads.
30"x30"x10' Pond, 2 heads.	48"x48"x10' Niles, 4 heads.
30"x30"x12' Pond, 2 heads, 220 v., d. c., reversing motor drive.	54"x54"x20' Niles, 4 heads.
38"x38"x12' Niles, 4 heads.	68"x60"x14' Niles, 4 heads.
38"x38"x16' Niles, 3 heads.	60"x60"x20' Niles, 3 heads.

MILLERS AND GEAR CUTTERS.

No. 3 Brown & Sharpe universal, old style.
No. 3 38"x8" Brown & Sharpe gear cutter.
No. 4 36"x9" Brown & Sharpe gear cutter.
No. 6 60"x12" Brown & Sharpe gear cutter.
15" Gleason bevel gear generator.

DRILLING MACHINES.

60" Niles, heavy vertical.	5' Niles semi-universal, old style.
3' Grant radial drill and boring mch.	6' Niles semi-universal, old style.

GRINDERS.

4"x30" No. 11 Brown & Sharpe plain grinder.	39" grindstone frame, B. & S.
---	-------------------------------

BORING MACHINES.

No. 1 Bement horizontal, 2 $\frac{1}{2}$ " spindle, 5' table.
No. 2 Bement horizontal, 3 $\frac{1}{2}$ " spindle, 6' table.
No. 3 Bement horizontal, 4 $\frac{1}{2}$ " spindle, 9' table.
60" Bement boring and turning mill.
6" Bement floor borer, no milling feeds.

MISCELLANEOUS.

Air compressor, type 10, Ingersoll-Rand, steam driven, capacity 535'.
Air compressor, Ingersoll-Rand duplex, motor driven, with 35 h. p., d. c. motor, capacity 215'.
Air compressor, Gardner duplex, steam driven, 837'.
Blower, No. 10 Sturtevant.
Blower, No. 70 Buffalo.
Crane, 20 ton, 48' span Sellers, 220 volts, direct current.
Engine, 164 h. p. McEwen, direct connected to 100 k. w. generator, d. c. 220 v.
Profiler No. 3 automatic, Keller.
Saw, 8" rounds, Higley.
Slotter, 6" Bement.

SECOND-HAND MACHINERY

FOR SALE BY

Federal Machinery Sales Company,

8 N. Jefferson St., Chicago, Ill. 208 Sycamore St., Milwaukee, Wis.

Used Tools—Fine Condition.

DRILLING MACHINES.

Type "A" Henry & Wright, high speed. 2-spindle Silver, b. g., p. f. No. 3-D Minster high duty.

GEAR CUTTERS.

14" Lees-Bradner gear generator. 48" Brown & Sharpe, spur.
36" Brown & Sharpe, spur.

LATHES.

16"x 8' Lodge & Shipley, grd. head. 16"x 6' Milwaukee, c. r., 12" chuck.
16"x 8' Walcott & Wood, h. s., c. r. 26"x12' Buillard, tri. grd., taper att.

PIPE MACHINES.

2 1/2" to 6" Victor, power. 2 1/2" to 8" Curtis, power.

MISCELLANEOUS.

Broaching machine, No. 3 LaPointe. Screw machine, No. 8 Foster, hand, plain head.
Cold saw, No. 3 Burr. Thread miller, No. 8 Lees-Bradner, 4 1/2" centers.
Cutting-off machine, 3" Davis. Turret lathe, 24" Steinle, hvy., 4" h.s.
Grinder, 12"x24" Modern plain. Turret lathes, 24"x24" Jones & Lamson, geared head, (2).
Miller, No. 1 Cincinnati plain.
Press, No. 45 Stoll, grd., 1 1/2" stroke.
Punch & shear, dbl. end, 1 1/2" in 1/2".
Slotter, 6" Putnam.

FOR SALE BY

The E. A. Kinsey Co., Cincinnati, Ohio, Indianapolis, Indiana

DRILLING MACHINES.

3' Fosdick radial drill. 1/2" type BA-1 U. S. Electric. 220 volts, 60 cycle, 3 phase.
2' Fosdick plain radial, box column. Bausch 4-spindle multiple.
5' Fosdick plain radial, box column.
1/2" type T., U. S. Elect. 220 v., 60 cy.

GRINDERS.

14" J. C. Blount, wet tool. Water tool, 26 in. wheel.
8-spindle cock grinder. Wesche electric buffing, a. c. motor.
36" No. 19 Besly, disc.

LATHES.

10x5' Champion engine, plain rest. 20"x8' Fay & Scott, hex. turret on shears.
14"x8' Bradford, p. f., turret, pan bed. 20x10' Bradford, 2 c., c. r.
16"x8' LeBlond, q. c., c. r. 21x8' Bradford engine, 18" 4-jaw chk.
18x16' LeBlond engine, q. c., 16" chk. 24"x26' Porter, engine, q. c.

PLANERS.

18' Niles-B.-P. plate, 1/2" steel plate. 54-54x30 H. P. Betts, rev. d. c. motor.

TURRET AND SCREW MACHINES.

No. 1 Am. Tool & M. Co., sq. ar., s. b. g., 4 s. c. No. 2 Garvin, w. f., power feed turret, automatic chucks.
No. 2 A Warner & Swasey.

MILLING MACHINES.

No. 2-B B. & S. plain. Newton 21"x16" double housing slab.
Die milling machine, No. 4 Thurston improved, new. No. 6 Whitney hand miller.

MISCELLANEOUS.

Band saw, 36" Towsley, with motor. Chuck, 12" universal.
Bar and chucking outfits, No. 2 A Warner & Swasey. Cutting-off mch. 3" Hurlbut-Rogers.
Boring mill, 42" Niles. 2 heads. Gear cutter, 26" No. 3.
Boring mill, Pond vertical, 8' table, Oil pump, Trahern No. 1 F. rotary.
11' between uprights. Saw bench, Beach, table, 36x54".
Boring and milling machine, No. 2 Special internal grinding fixture, Brown & S., for No. 1 universal.
Fosdick horizontal. Tapping machine, Garvin No. 1.
Centering att., Carroll No. 2, cap. to 2". Vise, flanged, Brown & Sharpe No. 4.
Chain machine, Cross & Spiers.

SECOND-HAND MACHINERY

FOR SALE BY

Badger-Packard Mch'y. Co., 133-139 W. Water St., Milwaukee, Wis.

AUTOMATICS.

7/16" Hartford.
3/4" Hartford.

1 1/4"x17" Hartford.

DRILLING MACHINES.

3-spindle 3/4" capacity sensitive.
4-spd. 29/32" cap. Allen sensitive.
5-spd. 29/32" cap. Allen sen., (2).

30" Prentice, s. h.
20" 4-spd. Barnes, all geared.

GRINDERS.

No. 3 Diamond wet tool.
Gorton double disc.
72" Holmes auto. knife.
No. 160 Wells plain cutter & reamer.

Sterling universal tool and reamer
95% new.
Cleveland profile with motor for a.
c. or d. c., practically new.

LATHES.

12"x 6' Blaisdell, 4 s. c., s. b. g.
14"x 6' Lathe & Morse, 4 s. c., s. b.
g., l. c. g.

20"x8' American, 3 s. c., d. b. g., q. c.
20"x10' Bridgeport 4 s. c., s. b. g., l. c. g.

MILLING MACHINES.

No. 28 Ohio plain.
10x50 Hendey Lincoln.
26x10 Hendey Lincoln.
No. 12 Pratt & Whitney Lincoln, (2).

No. 10 Pratt & Whitney auto.
No. 12 Pratt & Whitney auto., (3).
Taylor & Fenn vertical, (3).
Briggs high duty, 16", type "A."

TURRET LATHES AND SCREW MACHINES.

1 1/2"x18" Pratt & Whitney turret lathes, (5).
2 1/2"x26" Pratt & Whitney turret lathes.

MISCELLANEOUS.

Gear cutter, 36"x9" Gould & E.
Hammer, Mayer 25 lb.
Hammer, Star 35 lb.

Planer 24"x24"x16" Fitchburg.
Riveter, 3/16" cap. No. 2 Ajax, motor
drive, 3 ph., 60 c., 220 v.

Boring mill, 36" Bullard.
Boring mill, hor., B. & S. No. 1.
Brake, 8" Ohl, 10 g., hand.
Brake, 8" Keene, 18 g., hand.
Drill, 26" Aurora b. g., \$190.
Generator unit, 75 k. w., 110-220
v., 125 h.p. engine, total 150k. w.

Pipe mche., 2 1/2", also 4".
Punch, foot, about No. 2, o. b. i.
Punch, foot, Consol., 3" stroke.
Punch press, 130 lb., 11" wheel,
auto. stop, capacity 1/4"x1-16".
Punch & shear, 2 1/2".
Riveters, Schuster 1 1/2"; Grant 1 1/2".

Draw bench, 24" Ohl, also Kalamein dies, complete—window, door, interior.

Gear hobber, S. & S.
Grinder, cock, dbl. end. \$40.
Grinder, 48"x5" wh., 1 1/2" shaft.
Hammer, 600 lb. Morgan, double leg.
Lathe, 24"x10" American, q. c.,
d. b. g., heavy.

Saw, band, 24", inc. table.
Screw press, 1 1/2" scr., 10" travel.
Screw press, 2 1/2" screw.
Screw press, 3 1/2" screw.
Screw machine, Cleveland auto-
matic, 2", \$450.
Shaper trav. hd. 10" str., 40" tr.

Gear cutter, 60" hvy. dbl. geared 1'x2' tooth, one cut. Bevel, spur, worm.

Lathe, 32"x12", tr. b. g., c. r., \$900.
Lathe, 32"x14", 50" rais. blks. \$800.
Lathe, 3 1/2"x16", grs., 42" blks.
Lathe, 36"x20", d. b. g., tap., \$1000.
Lathe, pulley, 30" double rest.
Lathe, spinning, 24"x7".
Lathe, Fox 18", 1/2".

Shear, cir., 28", 18 g.
Slab miller, 42", 8" hvy. planer
type, cutters.
Surf. gr., Saxon, 44x10 1/2" table.
Tapping machine, 20" hor. disc.
Tire bender, hand, 7"x1".
500 other tools; write us.

THE ENTERPRISE MACHINERY CO., 28 S. Clinton St., CHICAGO

Any Idle Equipment?

If you have any Machine Tools you do not need, this is a good time to sell them

Offer them to any of the dealers in Second-Hand Machinery who advertise in these pages. No doubt they can turn them into money for you to good advantage.

Or if you prefer to sell them direct to a user somewhere in the United States, an advertisement in Hitchcock's Machine Tool List will put them before all the plants in the country in which iron-working machinery is used. Rate, \$4 for eight lines or less; additional space 50 cents a line.

Hitchcock's Machine Tool List

A. H. HITCHCOCK, Publisher

1220-1235 Caxton Building, Chicago, Ill.

Machine Tools In Stock

We have the following machines at our Warehouse, 147 Provost St., Jersey City, N. J.:—

MILLERS

- 5 Type "A" Briggs Millers.
- 1 No. 0 Brown & Sharpe Plain Miller.
- 10 Wisconsin Hand Millers.
- 1 Hendey No. 5 Lincoln Type Miller.
- 1 Garvin No. 16 Plain Miller, with 60" table feed.
- 1 Cincinnati No. 3 Plain Miller, old type.

LATHES

- 1 Lodge & Shipley 14x6 Q. C. G. Engine Lathe.
- 9 Rahn-Larmon 18x6 Lathes, new.
- 1 20x12 American Lathe, new.
- 1 Fay & Scott 36x12 Lathe, with blocks.
- 1 24" Gisholt Turret Lathe.

SCREW MACHINES

- 10 1 1/4" Hand Screw Machines.
- 1 1 1/4" Chicago Automatic Screw Machine.

GRINDERS

- 1 Brown & Sharpe No. 2 Universal Grinder.
- 2 No. 1 Landis Universal Grinders.
- 3 Fitchburg 6x15 Plain Grinders.
- 2 No. 14 Brown & Sharpe Plain Grinders.
- 2 6x48 Pratt & Whitney Plain Grinders.
- 1 No. 11 Brown & Sharpe Plain Grinder.
- 1 Norton 10x36 Plain Grinder.
- 1 Queen City 12x36 Plain Grinder.

MISCELLANEOUS

- 1 Drees 4" Plain Radial.
- 1 8-Spindle National Automatic Nut Taper.
- 1 Bickford 5" Plain Radial Drill.
- 2 24" Upright Drills.
- 50 Spindles for Sensitive Drills.

*We invite tenders of machine tools
from holders of excess equipment.*

Industrial Machinery Corporation

147 Provost St., Jersey City, N. J.

We Have For Sale in Our Warehouse
27 Briggs High Duty Milling Machines

Type "A", Made by Gooley & Edlund

Used three to six months in the manufacture
of light gun parts

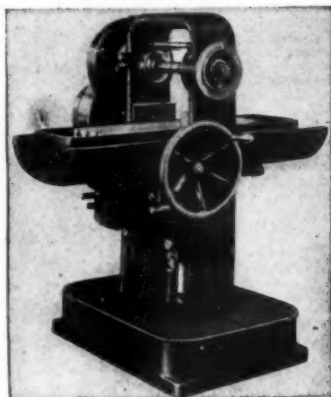


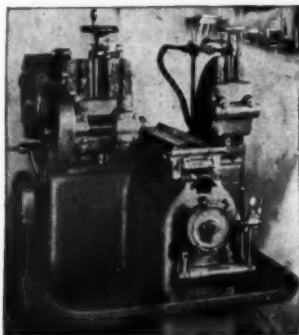
Table Traverse	16"
Size of Table	36" x 12"
Working Surface	24" x 8"
Between Housings	12 1/4"
Taper of Arbor No. 11 Brown & Sharpe	12"
Maximum distance, Table to Arbor	Eight
Feed Changes	42" x 52"
Floor Space	2300 lbs.
Weight	
Some with cone pulleys	

PRICE, each ----- \$400.

Less 10% in lots of six

J. L. LUCAS & SON, Inc.
No. 3 Fox Street, BRIDGEPORT, CONN.

Another LUCAS SERVICE Opportunity



We have just disposed of 61 Briggs Millers which we were able to buy at a low price. Satisfied with a small profit, we quickly sold out. We are now offering:-

Eighty-one (81) No. 12

Pratt & Whitney Semi-Automatic Milling Machines

which we have taken over in one lot from the Government, which will enable us to put another bargain before you. The dimensions are as follows:-

Size of table $6\frac{1}{2}$ " x 18", one T-slot.
Diameter of arbor 1".
Feed of table 12", automatic return.
Side adjustment of head 5".
Side adjustment of arbor support 7".
Vertical adjustment of head and arbor-support 7".
Maximum distance over table to center of arbor 9".
Maximum distance of cutter space 15".
Tight and loose pulley drive, $\frac{3}{4}$ " face.
Floor space 48" x 48", weight 4200 lb.

These machines require no countershafts. They are all in excellent condition, having been used on light munition work only, and have seen service of but 6 months to one year. Price each, f. o. b. Bridgeport.....\$500.00

J. L. Lucas & Son, Inc.
3 Fox St., BRIDGEPORT, CONN.

New Machinery For Sale

In Stock at Chicago and New York

Lathes

26" x 12' Wickes, q. c. g., d. b. g.
24" x 13' Chard, q. c. g., d. b. g.
24" x 10' Advance, q. c. g., d. b. g.
20" x 11' Chard, q. c. g., d. b. g., (2).
20" x 9' Chard, q. c. g., d. b. g.
20" x 10' Wickes, q. c. g., d. b. g.
16" x 8' Whitcomb-Blaisdell.
16" x 7' Chard, q. c. g., d. b. g.

16" x 6' Cleveland tool room, (2).
16" x 6' Whitcomb-Blaisdell.
14" x 8' Cisco, q. c. g., d. b. g.
14" x 6' Amtew, d. b. g.
12" x 5' 6" Davis tool room.
12" x 4' 6" Cleveland precision.
6" x 30" and 6" x 36" Dalton bench.
Full line, Rivett precision bench.

Drilling Machines

4' Western plain radial.
3 1/2' Canedy-Otto radial, (3).
3' Wisconsin sensitive radial.
32" Cleveland sliding head, (3).
28" Cleveland sliding head, (3).
25" Snyder, with tapping attach.
25" Cleveland upright.
23 1/2' Cleveland, upright.
23" Snyder upright (2).

22 1/2" Cleveland upright, (3).
21" Cleveland upright, (5).
20" Milwaukee, upright, (2).
20" Wisconsin, all-geared, (2).
20" Canedy-Otto, upright, (4).
2-spindle No. 2 Colburn.
2-spindle Detroit, h. s., b. b.
Belt and motor driven bench.
Van Dorn portable electric.

Milling Machines

No. 2 Cleveland universal, (2).
No. 2 Cleveland, plain.
No. 3 Becker vertical.
No. 2-A Fox universal.

No. 2-B Fox plain, (3).
Nos. 1-A, 1-B and 0-B Fox plain.
No. 1 U. S. hand miller, (3).
Nos. 2 and 3 Burke bench.

Grinders

No. 3 Modern universal, (2).
No. 1 Wilmarth & Morman univ.
No. 190 Wells universal.
Lafayette universal.
No. 2 Wilmarth & M. surface, (2).
24" Milwaukee wet tool.
10" x 32" Ott universal.
No. 103 Rivett internal.
No. 2 Reid surface.

6" x 6" Ott internal.
Webster & Perks, (various sizes)
No. 1 Norton cutter and tool.
Yankee drill—various sizes.
Grand Rapids drill—various sizes.
Partridge floor stands, (all sizes)
Strand electric, flexible shaft.
Dumore, (all sizes)

Shapers

20" Milwaukee heavy duty.
16" Milwaukee.

7" Rhodes horizontal.

Hack Saws

Peerless, (all sizes)
No. 1 Racine.

6" x 6" Starrett.

Miscellaneous

Arbor presses, Atlas, all sizes.
Buffing machine, No. 2 Blount.
Filing machines, Nos. 2 & 3 Barry.
Planer, 36x30x8' Gordon.

Planer, 24"x24"x6' Whitcomb-B.
Press, Lebanon, foot.
Shear, 18-H Lenox, throatless.
Tinner's rolls, Pexto.

USED MISCELLANEOUS

Boring mill, 60" Bullard, 2 heads.
Cold Saw, No. 15 Lea Simplex.
Lathe, 14" x 8' Dreses Monitor. (2)

Lathe, 24" Steidle turret.
Miller, No. 1 Farwell.

Dale-Brewster Machinery Co., Inc.

541-7 W. Washington Blvd., - - - Chicago

54-60 Lafayette St., - - - New York

Address all inquiries attention Department A

EXCEPTIONAL OPPORTUNITY

**Modern Tools In Excellent
Shape from Lincoln Motor
and Other Aeroplane Plants**

DRILLS

- (1) Style "A" Barr 2 spdl. sens.
- (2) 26" Aurora Sliding Head.
- (1) 5' Bickford Full Universal Radial.
- (1) 6' Prentice Plain Radial.

GRINDERS

- (1) No. 11 Brown & Sharpe Pl.
- (4) No. 18 Bryant Semi-Automatic Hole Grinders.
- (2) No. 20 Bryant Deep Hole.
- (1) 12x96 Landis Plain.
- (1) 16x48 Landis Crank.

LATHES

- (1) 9"x18" Porter & Cable Manufacturing.
- (3) 14"x8" Rockford.
- (1) 14"x6" Mulliner Tool Room.
- (1) 16"x8" Draper.
- (1) 16"x7" Monarch.
- (1) 16"x8" Monarch.
- (1) 16"x6" L. & S. Patent Hd.
- (1) 18"x8" Bradford.
- (1) 20"x9" Lehmann.
- (1) 20"x10" Reed Prentice Grd. Head.
- (1) 14-28"x6" Fay & Scott Extension Gap.
- (1) 26"x16" Bridgeford.
- (1) 26"x18" Bridgeford.
- (20) 8x60 Lo-Swing.

MILLING MACHINES

- (3) No. 25 Bilton Plain.
- (3) No. AB-1 Becker New Model High Power Vertical.
- (1) No. 5-C Becker Vertical.
- (2) No. 7 Becker Lincoln Type.
- (5) No. 2 Cleveland Plain.
- (1) No. 2 Cleveland Universal.
- (1) No. 2-B Milwaukee Vert.
- (6) 10" Pratt & Whitney Auto.
- (10) No. 6 Whitney Hand.
- (8) No. 1 U. S. Hand (New).

TURRET LATHES & SCREW MACHINES

- (5) 34"x36" Acme Geared Hd.
- (2) 21" Gisholts.
- (6) 24" Gisholts.
- (1) No. 52 National Acme Auto.
- (1) No. 55 National Acme Auto.
- (1) 3" Foster.

MISCELLANEOUS

- (2) No. 6 Fellows Gear Shapers.
- (5) Gridley Piston Ring Mchs.
- (2) 6" Pratt & Whitney Vertical Shapers, 20" Circular Table.
- (1) 10" Pratt & Whitney Vertical Shapers, 24" Circular Table.
- (4) Whitney 2 Spindle Profilers 12" Spindle centers.
- (1) No. 12 Leland & Gifford Single Spindle Profiler.
- (1) No. 3 Garvin Sgl. Sp. Profiler.

**WE REBUILD THE MACHINE
WE PURCHASE MODERN TOOLS**

THE NOTCH & MERRYWEATHER MACHINERY CO.
CLEVELAND
DETROIT CINCINNATI PITTSBURGH

**"NEW YORK'S GREATEST CLEARING HOUSE—
J. J. McCABE LATHE & MACHINERY CORP'N."**

THESE BIG TOOLS

are the same class of Tools that McCabe
has always endeavored to have, and on
which the McCabe reputation is built—*better than usual second-hand—and low priced.*

Used Heavy Triple-Geared Face-Plate Drive Lathes

- 50" Sw., 60' Bed, Johnson, auto. fd. to T-stock along bed for boring.
- 50" Swing, 30' Bed, Johnson, auto. feed to T-stock.
- 50" Swing, 21' Bed, Pond, Triple-geared.
- 38" Swing, 32½' Bed, Johnson.
- 36" Swing, 18' Bed, Putnam.
- 34" Swing, 34' Bed, Johnson.
- 30" Swing, 22' Bed, Niles.

Absolutely Brand New Lathes.

- 36" Swing, 16' Bed, turns 9' between centers.
- 32" Swing, 20', 18', 16' and 14' Beds.
- 29" Swing, 20', 18' and 16' Beds.

Used Upright Boring Mills

- 90" Swing, two heads on rail Pond Co.'s double web housings, complete with C-shaft.
- 72" Swing, two heads on rail, Betts Co.'s.

Used Horizontal Boring Machine

- 4" Spdl., 5" over bar, speed-box, single pulley drive; "Lucas type."

Used Planers

- 60" widened from 48"x48" high x 20' in length, with two heads on crossrail, complete with C-shaft.
- Other used 30" Planers, 8' Tables.

Slotting Machines

- 24" Str. Niles-B.-P., like new, with motors & complete equipment.

More Big Tools

- 60" gap, Horizontal Punch, Hilles & Jones; weight, 68,000 lbs.; 50" and 36" throat; single-end, interchangeable.
- 8' gap, Hydraulic Riveting Equipment, Bement-Miles.
- 28" Swing, Pond Rigid Type of Turret Lathe.
- 5' Arm Radial Drill, Dreses, belt-driven.
- Eight New 4' Arm Radial Drills, speed-box, tapping att.
- 28" and 32" Stroke Shapers.
- Big Grinder, Swings 20", takes 17' between centers, Landis.
- Milling Machines, etc.

GET OUR COMPLETE LIST No. 309—JUST ISSUED

**J. J. McCABE LATHE & MACHINERY
CORP'N, 149 Broadway, NEW YORK**

A Few of Our Best and Largest

We can only print here a short list of some of our tools.
Latest catalog just out, lists full stock—over 450 machines.

Vertical Boring Mills

- | | |
|---|--|
| 100" Betts, 3 heads, specially adapted for flywheels, pulleys, etc. | 60" Niles-Bement-Pond, 2 sw. hds., s. p. d., latest. |
| 72" Betts, 2 swivel hds., very heavy. | 42" Bullard, 1 sw. and 1 turret head. |
| 48" Colburn, 2 swivel heads. | 36" Bullard, vertical turret lathe. |

Radial Drills

- | | |
|--|---|
| 7' Niles plain. | 4' Bickford semi-universal, s. p. d. |
| 6' Baush, pl. belt or motor dr. hvy. | 4' Western full universal, latest, excellent. |
| 6' Bickford semi-univ., gr. box drive. | 4' Gang, plain, very good. |
| 5' Niles-Bement-Pond, mtr. driven. | |

Gear Cutters

- | | |
|----------------------------------|----------------------------------|
| Two 60"x8" G. & E., hobbing att. | 48"x10" Gould & Eberhardt, spur. |
| 36"x10" Gould & Eberhardt, spur. | 30"x12" Flather, spur gear. |

Grinders

- | | |
|---|--|
| Blanchard high power vert. surface, motor driven, almost new. | 18"x96" Brown & Sharpe plain, 98% new, weights 18,000 lbs. |
| 10"x36" Landis internal. | No. 23 Brown & Sharpe cylinder. |

Milling Machines

- | | |
|--|--|
| Two 50"x8" Ingersoll slab. | No. 2-A Garvin universal. |
| No. 3 LeBlond, heavy duty, geared head, used only for demonstration. | No. 2 Hendey plain. |
| No. 3 Hendey plain. | No. 7-H Becker Lincoln type, like new. |
| No. 2 1/2 Garvin universal. | Four No. 6 Whitney hand, like new. |

Planers

- | | |
|--|---------------------------------------|
| Three 54"x54"x14" Powell hvy. duty, 4 heads, almost new. | 42"x42"x12" Pond, 2 rail hds., excel. |
| 60"x48"x20" Gleason, 1 side and 2 rail heads. | 36"x36"x18" Pease, 2 rail heads. |
| | 36"x36"x14" Cin. heavy duty, 2 hds. |
| | 36"x36"x12" Niles-Bement-P., 3 hds. |

Punches and Shears

- 32" Sellers Punch & Shear, 2" thru 1 1/2", shears 2 1/2" rounds.
30" Bement-Miles Punch & Shear, 2" thru 1 1/2", shears 2" rounds.
New bold Rotary Splitting Shear, 4" cap., 28" throat, circular cutting att.
Henry Pels Coping Machine, armor plate frame, capacity 10" I Beam.
20" Betts Punch, capacity 1" thru 1 1/2".
19" Cleveland Punch, 4" thru 4 1/2".

Miscellaneous

- Two 800 lb. Merrill Board Drop Hammers.
25 lb. Bradley Helve Hammer.
8" Newton Slotter, like new.
No. 2 Barrett Horizontal Boring Machine, 5" bar, heaviest pattern, full equip.
10-ton Pawling & Harnischfeger traveling crane, 60' span, cab operated.
Two 3 1/2" Gridley Automatics, motor and belt drive, accurate.
For shapers, screw machines, keyseaters, slotters, turret lathes, rolls, and motors, see our latest catalog—sent on request.

Graves Machinery Exchange

Warehouse and R. R. Siding:
Johnston Ave. & Monitor St.,
Jersey City, N. J.

Offices: Suite 482
50 Church St., New York City
Telephone: Cortlandt 665

In Stock For Immediate Delivery

Milling Machines

- 1—No. 0 Kempsmith Universal Milling Machine, complete with universal index centers and vise.
- 1—No. 1 Brown & Sharpe Plain Miller, complete with triple index centers, worm gear hobbing attachment.
- 1—No. 20 Oesterlein Plain Miller, complete.
- 1—No. 1 Dow Plain Miller, complete.

Lathes

- 1—14" x 4' Pratt & Whitney, complete.
- 1—14" x 6' Prentice, complete.
- 1—16" x 7' Union, complete.
- 1—16" x 8' Greaves-Klusman, complete.
- 4—18" x 8' Greaves-Klusman, complete.
- 1—20" x 10' Robbins, with taper attachment.
- 1—26" x 10' Fitchburg, complete.
- 6—28" x 10' Walcott, q. c. double black gear, 2½" hollow spindle.

Drilling Machines.

- 12—Meyers Sensitive Bench Drills, with chucks.
- 1—20" Snyder Drill, wheel and lever feed.
- 1—No. 4 Baush 16-Spindle Multiple Drill.

Shapers

- 1—16" Hendey Friction Tool Room Shaper.
- 1—16" Whipp Crank Shaper, (New).

Grinders

- 1—No. 1 Norton Tool Cutter Grinder.
- 1—No. 2 Norton Tool and Cutter Grinder, complete.
- 2—Walker Surface, complete with magnetic chucks.
- 1—No. 2 LaSalle Automatic Surface.
- 1—No. 3 LaSalle Plain and Surface.
- 1—Hartford Automatic Surface.
- 1—Wilmarth & Morman Drill Grinder, style P. O., complete.
- 1—Milwaukee Wet Tool, 18" wheel.
- 1—Chicago Wet Tool, 18" Wheel.

Automatics.

- 2—Cleveland ½" Automatic Screw Machines, complete.
- 1—Gridley ¼" Four-Spindle Automatic Screw Machine.
- 1—2" x 24" Jones & Lamson Flat Turret and cone head complete.

Air Compressors.

- 1—6" x 8" Clayton Horizontal, belt driven.
- 1—10" x 10" Rand Duplex Vertical, belt driven.

Miscellaneous

- 1—No. 3 Nicholson Arbor Press on stand, with drivers.
- 7—No. 00 Errington Tapping Chucks.
- 1—Each Nos. 1, 2, 3, 4 and 5 St. Louis Tapping Chucks.
- 1—No. 2 Hiles & Jones Horizontal Punch, cap. ¾" in 1", 8" depth of throat.

We carry a complete line of Universal and Independent Lathe Chucks—and Barker Wrenchless Chucks.

The Morton Machinery Company
139 N. Third Street, Philadelphia, Pa.

FOR SALE

- 1—24"x12' New Haven Engine Lathe.
- 1—26"x12' Lodge & Davis Engine Lathe.
- 1—Beaman & Smith 4-spindle Vertical Cylinder Boring Machine.
- 1—B. & S. Grinder 18x96—1000.
- 1—60x24' D. A. Wright "Fifield" Screw Cutting Engine Lathe.
- 1—8" bar Barrett Horizontal Boring Mill.
- 1—Beaman & Smith 2-spindle Horizontal Cylinder Boring Machine.
- 1—18-36 Putnam Gap Lathe, quick change gear.
- 1—32" Barnes Drill Press.
- 1—No. 25 Toledo Geared Cam Press.

Vonnegut Machinery Co.
Indianapolis, Ind.

Good Used Tools

We offer the following used machine tools. Further particulars gladly given on receipt of request. We have facilities for overhauling used machinery and aim to offer only trustworthy machines.

BORING MACHINES.

Bement-Miles horizontal, 2½" bar, 20x30 cross table.
No. 2 Beaman & Smith horizontal boring machine, 4" dia. spindle, 63" traverse of head, 6½ h. p. Reliance motor, 2 h. p. head elevating motor.

DRILLING MACHINES.

No. 3-1 spindle Avev, bench (23). 24" Mechanics sliding hd., b. g., p. f. No. 1 Bickford plain radial, tapping, gear box belt drive, box table.	3' Gang pl. radial, tapping, pl. table. 6-sp. Hendey, power feed to each spindle.
--	---

GRINDERS.

No. 4 12x60 Landis universal. No. 2 Oakley univ. cutter and tool. No. 11 Rivett, oscillating. No. 1 Hartford auto. surface. No. 5 Rivett hand feed oscillating. Garrigus rotary surface.	20" Besly disc (2). No. 34 Van Norman internal with water att., (2). Pratt & Whitney vertical surface. Reed Prentice surface.
---	---

LATHES.

16x9 Lehmann, q. c., taper, oil pan. 18x8 Perkins. 18x10 Robbins. 18x8 Prentice Bros., geared head, single pulley drive, q. c., c. r., p. c. f., oil pan, chuck fitted. 16x8 Cincinnati, q. c., d. b. g.	21x8 Lodge & Davis, 2 chucks. 22x8 Schumacher-Boye, chuck. 26x12 Putnam, c. r., d. b. g. 56"x24" Wood & Light, b. g., c. r., p. c. f. 38x20 New Haven, steady and fol- lower rests, change gears.
--	--

MILLING MACHINES.

No. 14 Garvin plain, (4). No. 14A Garvin plain, (7). No. 15 Garvin plain.	No. 1½ LeBlond univ., motor dr. Type A Briggs plain. No. 1 Steptoe plain.
---	---

SCREW MACHINES.

1-15/16 Garvin wire feed. 2x24 J. & L. flat turret, cone dr., (3). No. 2½ Garvin single geared wire feed, (2).	24" Gisholt turret. 24x10 Lodge & Davis, oil pan, power feed to turret.
---	---

MISCELLANEOUS.

Gear cutter, No. 4 B. & S. auto. Planer, 24x24x6 Flather. Planer, 24x24x6 Putnam. Planer, 36x36x8 Pond.	Screw machine, 4-spdl. auto. No. 515 National Acme, arranged for motor. Shaper, 15" Hendey motor driven. Shaper, 24" Hendey motor driven.
--	--

Henry Prentiss & Company

Incorporated

149 Broadway

New York



Phone Franklin 5899

568 Washington Blvd.

New and Used Machinery for Immediate Delivery

BORING MILLS

3" Barrett horiz.	\$ 1800.
8" Barrett horiz.	4500.
60" Colburn vert.	4500.
60" Hement vert.	4000.
60" Bullard vert.	4000.

CUT-OFF MACHINE

4" Hurlbut & Rogers	\$ 250.
---------------------	---------

DIE HEADS

2-23 type "B" Murchey (7)	\$ 50.
14" Assorted Makes, (12)	50.

DRILLING MACHINES

No. 1 Avey sensitive	\$ 150.
20" B. G., p. f., (3)	100.
20" Silver, (7)	160.
No. 25 Foote-Burt, (2)	675.
26" Barnes	250.
4" Sgl. pulley, gear box drive radials, (6)	2500.
4" American radial	2200.
12 Spindle Pratt & Whitney	5000.

GRINDERS

No. 12 Imperial, (3)	\$ 73.
No. 1 LaSalle plain & surface	94.
No. 5 Diamond, (2)	100.
Cincinnati cutter	150.
No. 5 Ott Grinder	550.
No. 2 All-Angle Grinder	710.
No. 1 Webster & Perks	1750.
No. 3 Modern universal (5)	1800.
12x48 plain self-contained (5)	2750.
12x60 plain self-contained (2)	3000.
18x96 Brown & Sharpe	2400.

STEAM HAMMER

6x6 cap. David Bell	\$ 500.
---------------------	---------

LATHES

14"x 6' Springfield	\$ 300.
15"x 6' Carroll-Jameson	350.
16"x 6' Bridgeport	400.
16"x 6' Schumacher-Boye	450.
16"x 6' Milwaukee, single bk. geared, quick change	600.
16"x 7' Oliver, (2)	1150.
16"x 10' Von Wyck	600.
17"x 6' LeBlond, q. c., (3)	750.
18"x 8' South Bend	650.
18"x 8' Oliver, (3)	1495.

LATHES—Cont'd

20"x 8' Walcott	\$ 770.
24"x 20' American, q. c.	1500.
28"x 13' 6" Oliver	3350.
30"x 10' Putnam gap	500.
30"x 12' Lodge & Shipley	300.
32"x 12' Putnam, motor drive	2000.
34"x 14' 6" Fifeild	2500.
60"x 24' Fifeild	5500.

FIFIELD LATHES—

Immediate Delivery from Stock

50"x 20' cone type	\$ 6800.
50"x 32' " "	9200.
50"x any length cone type	
60"x 24' cone type	10,900.
60"x 25' " "	11,150.
60"x 30' " "	13,650.
60"x 34' " "	17,900.
60"x 24' motor drive	12,300.
60"x 25' " "	12,500.
60"x 30' " "	13,800.
60"x 34' " "	19,800.
96"x 24' cone type	26,500.
96"x 30' " "	35,500.
96"x 60' " "	53,500.

PLANERS

30x30x10' Powell, 2 hds. (4)	\$ 3500.
36x36x12' New Albany, 4 hds.	6300.
36x36x14' " " 4 hds.	6450.
40x40x 8' old type	600.
40x40x14' Planer, 4 hds.	4500.
42x48x11' Gray	3000.
48x48x12' Putnam	10,000.
60x60x21' Pond	4000.
78x48x15' New Albany	5000.

PULLEYS

5 Carloads Wood and Steel Split Pulleys, 40% off.

SCREW MACHINES

No. 1—1" Chicago auto., (5)	\$ 500.
No. 1 1/2 Pratt & W., (2)	300.
No. 2 B. & O.	700.
No. 2 Brown & Sharpe, auto.	750.
No. 4 Foster	750.
No. 5 Foster (4)	800.
No. 10 Foster (5)	1000.

We have just purchased and offer for immediate delivery the complete Machine Tool equipment of a Machine Tool Manufacturing Plant. The following are a few of the Tools we offer:

84"x84"x32' 4-Head Putnam Planer.
 60"x60"x20' 4-Head Sellers Planer.
 54"x54"x16' 4-Head Sellers Planer.
 44"x44"x12' 4-Head Pond Planer.
 66"x66"x20' 2-Head Bement Miles Planer.
 38"x48"x16' 2-Head Bement Planer.
 24"x48"x16' Rahn-Larmon Gap Lathe.
 22"x10' American Geared Head Lathes, (2).
 12"x 5' Precision Lathes, (5).
 Barnes Horizontal Boring Mill.
 4' Bickford Plain Radial.
 No. 1½ B. & S. Plain Miller.
 Also Shapers, Drills, Grinders, Turrets, Etc., Etc.

*Do not ask for List but tell us definitely what you want.
 Machines may be inspected now at Columbus.*

The Osborne & Sexton Machinery Co.

Columbus, Ohio

Dayton Office: Room 1118 Lindsey Bldg., Phone Main 1524

A PURCHASE FROM THIS LIST OF USED EQUIPMENT MEANS A PURCHASE OF SERVICE AND SATISFACTION.

SCREW MACHINES

Garvin No. 2½ Plain, 1-7/16" cap.
 Foster No. 3, grd. fric. head, 1-5/16" cap.
 Southworth No. 2 Hand, 1" cap., air chucks.
 P & W 1" Hand, plain head, a. c., w. f.

GRINDERS

Blanchard High Power Surface, 28" m. d.
 Brown & Sharpe No. 2 Auto. Sur., latest type.
 R. Hoe & Co., No. 2 Auto. Surface, with mag. chuck.
 Gardner No. 14 B. B. Disc, 2 ring wheel chucks.

MILLING MACHINES

Becker No. 4-B Vertical, with rotary attachment.
 Brown & Sharpe No. 5 Vertical, reg. equip.
 LeBlond No. 2 Back Geared Plain, q. c. g.
 Pratt & Whitney No. 12, drop table, auto.

LATHES

Flather 14"x8", elev. rest, p. c. f.
 American 14"x8", s. b. g. hd., taper and draw-in att.
 Putnam 16"x8", c. r., q. c. g., actual swing 18½".
 Prentice 18"x10", q. c. g.

MISCELLANEOUS

Stephens 20" Back Geared Crank Shaper.
 Stockbridge 16" Single Geared Crank Shaper.
 Henry & Wright Four Spindle Sens. B. B. Drill.
 Putnam 30" x 30" x 10' Planer, single head.

LYND-FARQUHAR CO., Dept. G Quality Machine Tools
 BOSTON, MASS.

Our Guarantee

Money Back If Not Satisfied

Drills—Radials and Multiples

- 1—5' Universal Radial.
- 1—Baush 12-spindle Multiple, equipped for 24 spindles, capacity $\frac{1}{2}$ " to $1\frac{1}{2}$ ".
- 4—Hoefer Drills, 21", 24", 26" and 28".
- 1—4' Universal Radial Drill, arranged for motor drive.

Rolls

- 1—Bertsch 10' Pyramid Type, drop end, diameter of roll 9", cap. approxi. $\frac{1}{2}$ ".

Grinders

- 1—10x36" Thompson Full Universal Grinder.
- 1—No. 2-A Landis 16x32 Universal Grinder.
- 1—No. 2 Manhattan Surface Grinder, (new).
- 1—Grand Rapids Drill Grinder, $\frac{1}{2}$ " to 2" capacity.
- 1—No. 2 Woods Universal Cutter and Tool Grinder.
- 1—No. 2 Oakley Universal Cutter and Tool Grinder, (new).

Shapers

- 2—16" Streine B. G. Shapers (new).
- 3—16" Whipp S. G. Crank Shapers, (new).
- 2—20" Ohio B. G. Crank Shapers, (new).
- 1—Each 16, 18, 21 and 24" Hollingworth Back. Grd. Crank Shapers, (new).
- 1—20" Ohio Back Gear shaper, (used)

Millers

- 2—No. 1 $\frac{1}{2}$ American Plain Millers, (new).
- 1—No. 2 American Plain Miller, (used).
- 1—Each Nos. 2-B and 2 Rockford Universal Millers, (new).
- 1—No. 0 Bickett Vertical Miller and Profiler.
- 2—No. 1 U. S. Hand Millers.

Lathes and Turrets

- 1—24" Gisholt Turret, chucking equip., taper att., rapid traverse, (modern).
- 1—3x36" Jones & Lamson Flat Turret Lathe, geared head, arranged for chucking work, late type.
- 2—No. 2 Smith Turret Lathes, 1-1/16 round collet capacity, pan, pump, automatic chuck, wire feed.
- 1—21" Gisholt Turret Lathe, with taper attachment, rapid traverse, etc.
- 1—26"x16 $\frac{1}{2}$ " Solid Spindle. Back Gear, Compound Rest, Engine Lathe.
- 1—Each Sidney Medium Pattern Lathes, 14, 16, 18, 20" by 6, 8, 10" beds, 3-step cone, d. b., q. c. g.
- 1—Each Sidney Heavy Duty Lathes, 15, 17, 19, 23, 27" x 6, 8, 10, 12, 14" beds, 3-step cone, d. b., q. c. g.
- 1—14"x6" Flather Lathe, p. r., h. s.
- 1—16"x10" Gray Lathe, change gears, countershaft, plain rest, etc.
- 1—16"x8" Gray Lathe, change gears, countershaft, plain rest, etc.

Miscellaneous

- 2—24" stroke Ayer Traveling Head Planers.
- 1—No. 6 Quickwork Rotary Shear, 48" throat, 1" cutting capacity.
- 1—24"x24"x8" Gray Planer, one head on cross rail.
- 1—26"x24"x8" Pond Planer, 2 heads.
- 1—No. 3 Long & Allstatter $\frac{3}{4}$ " Tire Welder.
- 1—6-A Toledo Butt Welder, capacity $1\frac{1}{2}$ " round.
- 1—No. 3 Brown & Sharpe 26" Gear Cutter.
- 1—75 Ton Elmes Style "A" Hydraulic Tire Press.

Send for Our Complete List of Machinery No. 220

Wayne Machinery Company
Fort Wayne, Indiana

Branch Office and Warehouse: 18 W. Second St., Dayton, Ohio

Grand Rapids Specials

Broaching machine, No. 4 Burr.
Cold saw, No. 4 Nutter-Barnes.
Compressors, 4x5 Imperial type
12, (2).

Drill, 10-sp. G. R. mult., 3" cap.
Drill, 21" Hoefer 4-sp. gang,
w. & l. f.

Drill, 20" Barnes all-geared.
Drill, 14" Chicago Elec., 120 v.
Electric furnaces, Haskins F. B.
204, F. B. 206 and F. C. 206

Forges, stationary, No. 32-H.
Buffalo, (4).

Grinders, 53" Besly No. 19 disc,
(2).

Hammer, 100 lb. Little Giant.
Hammer, 350 lb. Little Giant.

Hammer, power, Quickwork.
Lathe, 18" x 10' Schumacher-
Boye-Emmes standard.

Lathe, gap, 24-36x8' South Bend.
Miller, No. 34 Ohio heavy plain.
Millers, No. 1-B Fox plain, (2).
Nut tapper, Acme semi-auto.,
4" cap.

Oxy-acetylene generator, 50 lb.
Davis, with torch.

Planer, 33"x33"x8' New Haven.
Punch & shear, No. 54 Beloit.
Punch & shear, No. 1-10 Rock
River, power.

Radial, 34' Canedy-Otto.
Radials, wall, 24' Canedy-O., (2).
Sand blasts, AC-6 Pangborn, (2).

Ask for complete list

McMullen Machinery Company

"Everything in Shop Equipment" Grand Rapids, Mich.

Syracuse Supply Company Bargains

USED TOOLS

- 1 Bradford 16x8 Q. C. G., B. G. Lathes.
- 1 Putnam 24x24x6 Planer with one head.
- 1 Reed No. 2 Surface Grinder.
- 2 Bridgeford 26" H. D. Chucking Lathes, complete.
- 3 Bullard 21" Lathes, 2 Model H, 1 Model L.
- 1 Prentiss 36" H. D., S. H. Drill, B. G., P. F.
- 1 Becker No. 4B Vertical Milling Machine.

NEW TOOLS

- 5 Wilmarth & Morman No. 2 Surface Grinders.
- 1 Wisconsin Hand Milling Machine.
- 1 Fox No. 1C B. G., P. F. Milling Machine.
- 3 Monarch 24"x10' D.B.G., Q.C.G. Lathes complete.
- 2 Monarch 18"x8' D.B.G., Q.C.G. Lathes complete.
- 2 Detroit Model L-1 H. S. Sensitive Drill Presses.

BUFFALO
207 W. Getchens St.

ROCHESTER
306 Arlington Bldg.

SYRACUSE
W. Fayette St.

Syracuse Supply Company

ReMANUFACTURED - (ORIGINATED BY US) - MACHINE TOOLS

REAL BARGAINS—Every Re-Manufactured machine is being offered at real bargain prices. In fact, we can sell our ReManufactured tools, which compare favorably with new, at prices lower than those of the ordinary used tools.

LATHES.

- 4-40"x18' Fifield trip. gd., c. r.
- 4-40"x12' Fifield trip. gd., c. r.
- 23-32"x12' Pittsburgh double back
grd., comp. rest, qk. ch. grd.
- 3-30"x20' American geared head,
comp. rest, qk. ch. grd.
- 9-20"x11' American geared head,
comp. rest, qk. ch. grd.
- 5-26"x20' Bridgeford double back
grd., comp. rest, qk. ch. grd.
- 10-26"x18' Bridgeford double back
grd., comp. rest, q. ch. grd.
- 30-26"x12' Bridgeford double back
grd., comp. rest, qk. ch. grd.
- 75-26"x10' Bridgeford double back
grd., comp. rest, qk. ch. grd.
- 3-26"x12' Putnam, comp. rest, qk.
ch. grd., motor drive.
- 33-26"x10' Niles Bement-Pond,
d. b. g., c. r., q. c. g.
- 10-25"x10' LeBlond, dbl. bk. grd.,
comp. rest, qk. ch. grd.
- 58-21"x10' LeBlond, dbl. bk. grd.,
comp. rest, qk. ch. grd.
- 13-20"x 8' American, dbl. bk. grd.,
comp. rest, qk. ch. grd.
- 16-20"x 8' American, dbl. bk. grd.,
comp. rest, qk. ch. grd. p. f. t.
- 3-20"x 8' American, gd. hd.
- 14-20"x 8' LeBlond dbl. bk. grd.,
comp. rest., q. c. g.
- 35-19"x 8' LeBlond, dbl. bk. grd.,
comp. rest, q. c. g., p. f. t.
- 65-18" 8' LeBlond, dbl. bk. grd.,
comp. rest, qk. ch. grd.
- 19-18"x 8' LeBlond, dbl. bk. grd.,
comp. rest, qk. ch. grd.
- 8-18"x 8' Boye & Emmes, dbl. bk.
grd., comp. rest, qk. ch. grd.
- 21-18"x 8' Boye & Emmes, dbl.
bk. grd. comp. rest.
- 22-17"x 6' LeBlond Rapid Prod.,
comp. rest, qk. ch. grd.
- 7-16"x 6' Reed, c. r.
- 42-14"x 6' Reed, ex. hvy. pl. turn'g.

MILLING MACHINES.

- 20-No. 6 Whitney hand.
- 5-No. 34 Fox.
- 1-No. 1 Dow.
- 3-No. 1 Kempsmith plain.
- 4-No. 2 Kempsmith plain.
- 2-No. 3 Cincinnati plain.
- 3-No. 7 Becker Lincoln.
- 5-No. 32 Kempsmith Lincoln.

GRINDERS.

- 1-No. 2 Morse plain.
- 1-10"x50" Norton plain.
- 1-No. 2 Bath surface.

SHAPERS AND PLANERS

- 1-14" American.
- 1-16" Gould & Eberhardt.
- 2-24" Rockford.
- 1-26" Springfield.
- 10-26" Acme.
- 5-28" Gould & Eberhardt.
- 1-24"x24"x8" American.
- 2-36"x13"x14" Niles frog.
- 1-42"x36"x12" Pond.
- 1-56"x56"x10" Gray.

TURRET LATHES.

- 5-19" LeBlond universal.
- 34-19" LeBlond combination.
- 16-20" American combination.
- 12-21" LeBlond universal.
- 32-24" Steidle.
- 4-2-A Warner & Swasey.
- 7-3-A Warner & Swasey.

BORING MACHINES.

- 1-34" bar Binsse horizontal.
- 1-34" bar Barrett horizontal.
- 1-4" bar Niles horizontal.
- 1-2 sp. Beaman & Smith cyl.

DRILLS AND RADIALS.

- 2-No. 1K Henry & Wright.
- 1-No. 3K Henry & Wright.
- 2-No. 4B Henry & Wright.
- 2-No. 6B Henry & Wright.
- 4-3' American sensitive.
- 1-3' Fosdick radial.

AUTOMATIC

- 1-24" Cleveland Automatic.

Write for our Green List describing these and many others

HILL, CLARKE & CO. OF CHICAGO

649 W. WASHINGTON BLVD., CHICAGO, ILL.

Guaranteed Bargains

LATHES.

- 14x10' style B Hamilton, s. b. g.
- 18x8' style B Hamilton, friction geared head.
- 20x10' Boye & Emmes.
- 22x10' Lodge & Shipley.

GEAR CUTTERS.

- No. 3 heavy Brown & S. auto.
- 24x6 Gould & Eberhardt.
- 24" Whiton automatic.
- No. 1 Bilton.

GRINDERS.

- No. 1 Landis universal.
- 12x36 Landis plain.
- No. 12 Modern.
- Safety Emery Wheel, two heads.
- No. 17 Besly disc grinder.

SCREW MACHINES.

- No. 55 National Acme, (4).
- 24" Gridley auto., 4-sp., (6).
- 24" Gridley, 4 spindle.

- 34" Gridley automatics, single spindle, (17).
- 14" plain Cleveland automatic.
- 14" Cleveland automatic, extra capacity spindle 7.
- 2" Cleveland automatics, (2).
- 24" Cleveland automatic.
- 34" Cleveland automatic.
- No. 3 Smurr & Kamen, hd. (13).

MISCELLANEOUS.

- Boring mill, No. 1 Lucas horiz.
- Cutting-off machine, new Modern, 2" capacity.
- Drill press, 16" Hoefler.
- Drill press, 36" Bickford, b. g.
- Milling machine, Hillis & Jones rotary.
- Paner, 30"x30"x8' Pond.
- Polishing lathes, 9" Brown & Sharpe, double end, (8).
- Spinning lathe, Prybil.
- Turret lathe, 24" Steinle.

M. J. Walsh Machinery Co., 141 Sycamore St., Milwaukee, Wis.

NEW MACHINES IN STOCK

- 14" Bradford Standard Lathe.
- 16" and 24" Chard Lathes.
- No. 1 Toledo Hand Milling Machine.
- No. 29 Ohio Universal Milling Machine.
- No. 2 Lapointe Broaching Machine.
- No. 2 Oesterlein Universal Cutter & Tool Grinder.
- 16" and 24" Ohio Shapers.
- 16", 20" and 24" Cincinnati B. G. Crank Shapers.
- 15" Drees Monitor Lathe.
- No. O Bickett Profiling Machines.
- No. 4 Verdin-Kappas & Verdin Punch Press.

USED MACHINES IN STOCK

- No. 2 Avey Drill Press, two-spindle.
- No. 2 Avey Drill Press, single-spindle.
- Toledo Hand Milling Machines.
- 25" Cincinnati-Bickford Drill Press.
- No. 4B Becker Vertical Milling Machine.
- No. 6 Becker Vertical Milling Machine.
- No. 2-26" and 3-26" Brown & Sharpe Gear Cutters.
- 2x24 J. & L. Turret Lathes.
- 3x36" Jones & Lamson Flat Turret Lathe.
- 1, 2 and 3 Spindle Sipp Drill Presses.
- 2" Fosdick National Radial Drills.
- 12"x6" Gould & Eberhardt Gear Hobbers.
- No. 14 Besly Disc Grinder.
- No. 3 Brown & Sharpe Universal Grinder.

The Biggs-Watterson Co.

Cleveland, Ohio. Branches: Dayton, Ohio; Detroit, Mich.

Rebuilt Modern Machine Tools

LATHES

- 12-17"x8' National, quick change, double back gear.
- 2-17"x8' Sidney, quick change, double back gear.
- 21"x10' LeBlond Heavy Duty, quick change, (10).
- 26"x10' Prentiss, 3-step, double back geared.
- 28"x14' Fifield, 4-step, loose change.
- 24"x 8' Lodge & Shipley, quick change.
- 20"x10' Lodge & Davis, loose change.
- 2-26"x18' Bullard, motor drive.
- 36"x20' New Haven, quick change triple geared drive.
- 25-Lathe, 12 to 18" swing, 5' to 8' beds.

UPRIGHT DRILLS AND RADIALS

- 3' Drees, cone drive plain.
- 4' Bickford, cone drive plain, (2).
- 5' Niles Universal (motor drive).
- 4' Niles Semi Universal (motor drive).
- 6' Prentice Plain Radial, cone drive.
- 8-Spindle Western Multiple.
- 38" New Haven Upright, back geared, power feed.
- Style 2-M Baker, heavy duty.
- 42" Cincinnati Upright Drill, Back Gear and Power Feed.
- 30" Kern Upright Drill, Back Gear and Power Feed.

GEAR CUTTERS

- 36" Gould & Eberhardt, Spur, Automatic.
- 36" Flather, Spur, Automatic.
- 14" Eberhardt Bros., Spur and Bevel, Automatic.

VERTICAL & HORIZONTAL BORING MILLS

- 30" Bullard Vertical, turret head.
- 42" Niles, 2 heads, s. p. drive.
- No. 1 Cleveland Horizontal, 2½" bar.
- Warner & Swasey Horizontal, 2½" bar.

PLANERS, SHAPERS AND MILLERS

- 18" Whitcomb, Crank Planer.
- 24" Smith & Mills Geared Shaper.
- 36"x36"x16' Hewes & Philips Planer, two heads.
- No. 2 Brown & Sharpe Plain Miller.
- No. 34 Ohio Plain Miller, heavy, 98% new.
- No. 2 Cincinnati, Universal.
- No. 4 Cincinnati Plain Miller, double back gear.
- 6-Bristol Hand Millers.
- 2-Fox Millers, (Lincoln type).

SPECIAL—20,000 feet practically new Leather Belt.

Let us know your wants

We have a large variety of other Machine Tools

Broadway Machinery Company
Cincinnati, Ohio

THE CO-OPERATIVE MACH'RY CO.

117-121 St. Clair Ave., N. E.
CLEVELAND, O.

High Grade New and Used Machine Tools

Ask for our monthly list

Second-Hand Machinery

DRILLING MACHINES.

Mason single spindle high speed ball bearing, floor type.

16" Hoefler assembling drill, single speed.

18" Baker, stationary head, star lever and power feed.

44" Old style full universal radial.

GRINDERS.

16" Patch emery stand, with countershaft.

Heald cylinder grinder, latest pattern, practically new.

16" x 30" Webster & Perks universal, with internal and external att.

ENGINE LATHES.

13" x 5' Willard, compound rest, taper.

18" x 10' Lodge & Shipley, comp. rest, three step cone, quick change.

30" x 10' Fifield, compound rest gears, practically new.

32" x 16" Fay & Scott, power fd., turret on shears, turret tool post, fine.

TURRET LATHES AND SCREW MACHINES.

1" Smith turret lathe.

Two Truman M. Smith wire feed screw machines, pl. hd., cut-off rest.

3" Jones & Lamson flat turret lathe, with bar equipment.

MISCELLANEOUS.

52" Baush Boring Mill, condition good as new.

Two 50 lb. Beaudry Champion pwr. hammers, arr. for motor, NEW.

Two 3" Hurlbut-Rogers cutting-off machines, 4 ft. bed.

3" Stoeber pipe machine, with dies.

One each New Doty No. O-A and No. 1-A punch and shear.

Cincinnati drill press vise.

Marshall & Huschart Machinery Co.

17 S. Jefferson St., Chicago, Ill.

In Stock For Prompt Shipment

Good Used Tools

9"x18" PORTER-CABLE Manufacturing Lathe, complete with automatic draw-in attachment and c. s.

18" GISHOLT, complete with countershaft, cross slide, steady rest, automatic belt shifter, turret tool holders, extra chuck jaws, etc.

24" GISHOLT, complete as described above.

30" COLBURN Vertical Turret Lathe, with turret head on rail, variable speed, motor driven, 220 v., d. c.

72" BETTS Vertical Boring Mill, single head, housings extended to swing 10'. Regular table 68" diam. by 8" thick. Extension for large diam. work.

Type A, GOOLEY & EDLUND Briggs Type Miller, 22" traverse, complete with c. s., arbor, pump, etc.

4" CLEVELAND, Automatic Worm Miller.

10x24" LANDIS Universal Grinder, complete with countershaft, etc. Excellent condition.

20x42" LANDIS Universal Grinder, complete with countershaft, etc. Excellent condition.

4" bar NILES Horizontal Boring and Drilling Machine, b. g., bores to center of 60" with plain table in lowest position. Complete with countershaft.

3" bar BINNSE Horizontal Boring and Drilling Machine, b. g., bores to center of 60" with plain table in lowest position. Complete with countershaft.

24" GARDNER Double Disc Grinder, ball bearing, complete with countershaft and floor press, two discs.

No. 4 NEWTON Combination Cold Saw Cutting Off Machine. Carries 36" saw, capacity 11" rounds, 24" beams. Machine now arranged for rotary planing, having a 20" inserted tooth head, motor driven by 15 h. p. constant speed motor, 220 v., d. c.

30" CLARK Double Cutting Metal Band Sawing Machine.

72" LENNOX Rotary Splitting Shear for $\frac{3}{4}$ " plate, arranged for motor dr.

New SIDNEY Production Lathes in stock, all sizes.

May we quote on your requirements?

Send for Catalog covering DEMCO High Speed Ball Bearing Drills, Drilling and Tapping Machines, and Drilling, Milling and Tapping Machines.

D. M. Osborne Machinery Company
221 St. Clair Ave., N. E., CLEVELAND, OHIO

Bargains in Used Machine Tools

- 1—5C Becker Vertical Milling Machine.
- 1—No. 4 Warner & Swasey Pattern Geared Friction Head Screw Machine.
- 2—Acme 16" Geared Friction Head Universal, Fox type turret Lathes, new, at used prices.
- 1—No. 6 Diamond Double Disc Grinder, ring wheel chucks and universal tables.
- 1—No. 6 ditto, single end.
- 3—No. 6 Whitney Hand Milling Machines.
- 3—6x30 Dalton Bench Lathes.
- 10—13x6 Seneca Falls Star Engine Lathes.
- 1—No. 0 LaPointe Broaching Machine.
- 1—Max Ams No. 1245 Double Action Press, with roll feed.
- 1—No. 68C Bliss Double Action Press.
- 1—Similar size Bliss Double Action Press, bolster 11x21.
- 1—Similar size Farrell Double Action Press, bolster 14x23.

The H. A. Smith Machinery Co., Inc.
 501-505 East Water St., Syracuse, N. Y.

OGDEN R. ADAMS

USED TOOLS

- | | |
|-------------------------------------|--|
| Boring mill, 34" Rogers. | Lathe, 26"x30' Davis, eng. |
| Drill, 12" Woodward & R. sens. | Miller, 36" Gookey & E. plain. |
| Drill, 20" Davis, back geared. | Miller, 24" B. & S. plain. |
| Drill, 3-spindle Sigourney. | Miller, No. 6½-B Becker, Lincoln type. |
| Drill, 4-spindle No. ½ Avey. | Press, No. 37 Niagara. |
| Drill, 12-sp. mult., Natco style K. | Press, No. 4 Baxendale. |
| Gear cutters 40x40x14 Flather, (2) | Shapers, 12" & 15" Hensley, frict. |
| Gear cutter, 13 B. & S. auto. | Slotters, 8" Newton, (2). |
| Grinder, No. 2 B. & S., surface. | Tapper, No. 0 Garvin. |
| Lathe, 11"x4' Pratt & W., speed. | Tapper, No. 1 Garvin auto., excellent condition. |
| Lathe, 14"x6' Fitchburg. | Turret lathe, 16" Meridan. |
| Lathe, 14"x6' Hensley, grd. head. | Turret lathe, No. 22½ Garvin. |
| Lathe, 16"x6' Gleason. | |
| Lathe, 18"x10' Reed. | |

All At Rochester, N. Y.

RELIABUILT MACHINE TOOLS

SPECIALS—

- 1—NEW 36"x28' PUTNAM High Duty Triple Geared Lathe.
- 1—36"x38' PITTSBURGH Geared Head Lathe, same as new.
- 1—38"x18' NILES-BEMENT-POND Lathe, like new.
- 1—New 42"x18½' NEW HAVEN High Duty Triple Geared Lathe.
- 1—36"x19' AMERICAN Geared Head Lathe, like new.
- 4—36"x14' PUTNAM All-Geared Lathes Motor Drive, 230 V.
- 4—48"x32' BRIDGEFORD Lathes, All Geared Head, Q.C.G., complete.
- 1—36"x21' AMERICAN High Duty Lathe, like new.
- 1—New 48"x48"x14' Detrick-Harvey Openside Motor Driven Planer, three heads, complete.
- 1—New No. 3-B MILWAUKEE High Power Plain Miller, complete.
- 1—No. 3-H LeBLOND High Duty Plain Miller, like new.
- 1—No. 1 KEMPSMITH Plain Miller, complete; slightly used.

-
- 1—New 10' NILES-BEMENT-POND Heavy Type Vertical Boring Mill, two swivel heads.
 - 1—Newton Horizontal Floor Type Boring Mill, 10" Bar.
 - 1—42" BULLARD Vertical Boring Mill, two swivel heads.
 - 1—3' AMERICAN Plain Radial Drill, complete.
 - 1—3½' FOSDICK Plain Radial, complete.
 - 1—5' NILES Semi-Universal Radial complete.
 - 1—6' DRESES Plain Radial Drill, arranged for motor.
 - 2—No. 4 CINCINNATI Universal Millers, vertical head.
 - 1—No. 2 CINCINNATI Vertical Miller, sliding head.
 - 2—New 48"x48"x28' CINCINNATI Planers.
 - 4—New 42"x42"x12' SIMMONS Openside Planers, two heads.
 - 1—36"x36"x10' CINCINNATI Planer, two heads, complete.
 - 1—42"x42"x12' BICKETT Planer, two swivel heads, complete.
 - 2—24"x24"x8' CINCINNATI Planers, two heads.
 - 4—30"x18' AMERICAN Geared Head Lathes.
 - 1—28"x18' POND Lathe, 12' between centers.
 - 4—20"x 8' AMERICAN Heavy Duty Lathes, complete.
 - 4—18"x10' HENDEY Tool Room Lathes, single pulley, taper attachment and relieving attachment, excellent.
 - 1—New 12"x6' MULLINER Tool Room Lathe, all attachments.
 - 1—26"x26"x8' AMERICAN Pattern Tool Room Planer.
 - 1—No. 5 BROWN & SHARPE Universal Grinder.
 - 1—No. 2 WILMARTH & MORMAN Surface Grinder.
 - 1—No. 60 HEALD Internal Grinder.
 - 1—24" FLATHER Shaper, complete.
 - 2—24" MILWAUKEE Shapers, like new, complete.
 - 1—New 20" Walcott Back Geared Shaper.
 - 2—30 Ton MORGAN Cranes, 50' span, 100' drop.
 - 1—Model B GOOLEY & EDLUND Milling Machine, 54" table.
 - 1—No. 0 Giddings & Lewis Horizontal Boring Mill, like new.
 - 2—400 lb., and 800 lb., BILLINGS & SPENCER Drop Hammers "Model B.
 - 1—New 18"x96" NORTON Plain Grinder.
 - 1—18" and 24" NEWTON Slotters, motor drive.
 - 1—New 500 K. W. General Electric Motor Generator.
 - 1—Six Spindle ROCKFORD Gang Drill 20", complete.

SIMMONS MACHINE CO., Inc., Albany, N. Y.

1001 SINGER BLDG., NEW YORK,

358 ELICOTT SQUARE, BUFFALO

W. H. J. Fitzgerald & Co.

30 Oliver St., Boston, Mass.

10—No. 60 Heald Cylinder Grinders.

1—New Britain Six Spindle Automatic Screw Machine, 1— $\frac{5}{8}$ " x 7".

1—2 $\frac{1}{2}$ " Horizontal Boring Machine.

1—Two Spindle Boring and Milling Machine.

Ingersoll Milling Machines, Power Presses, etc.

These are high grade offerings.

Six $\frac{1}{4}$ Inch Automatic Screw Machines (Stehli Patent)

Each fitted with screw slotting attachment. Manufactured by Hartford Machine Screw Company. These machines adapted to the rapid production of all kinds of small screws, bushings, studs, etc. Condition, good as new.

Production Equipment

3—(New) 42" BULLARD NEW ERA TYPE VERTICAL TURRET LATHES. Turret and Side Head. Arranged for Motor Dr.

1—Coffman (LUCAS TYPE) HORIZONTAL BORING, Drilling and Milling Machine. 3 $\frac{1}{2}$ " Bar.

1—72"x72"x26" Niles PLANER. 2 Rail and 2 Side Hds. Belt Dr.

1—48"x48"x28" CINCINNATI HEAVY DUTY PLANER. Two Heads. Reversing Motor Drive.

6—No. 6—62" Becker VERTICAL MILLERS.

2—No. 5-C BECKER VERTICAL MILLERS.

1—LEES-BRADNER EXTERNAL THREAD MILLER.

1—40" FLATHER GEAR CUTTER.

1—DIAMOND HEAVY FACE GRINDER. Table 84" Long.

5—No. 6-A Potter & J. Automatic Chucking Machines, 2 $\frac{1}{2}$ " Hole.

6—Potter & Johnston Auto. Chucking Mches., 4 $\frac{1}{2}$ " Hole in Spdl.

3—15" Newton SLOTTERS. Motor Driven.

2—6" Newton SLOTTERS.

1—14000 lb. Morgan Dbl. Frame STEAM FORGING HAMMER.

1—No. 5 Blakeslee BULLDOZER. (Similar to No. 4 Williams & W.)

1—8"x60" LO-SWING LATHE.

1—No. 35 Landis Floor Type HORIZONTAL BORING, DRILLING AND MILLING MACHINE, 3 $\frac{1}{2}$ " Bar.

Also complete machine shop equipment

What have you for sale?

Day Machinery Company
66 Exchange St., BUFFALO, N. Y.

Machine Tools

98% New

Latest Designs

Four 26"x12' Boye-Emmes heavy duty Engine Lathes, double back geared, wide belt cone, quick change gear.

25"x10' Crawford heavy duty double back geared Lathe, quick change gear, a beautiful tool.

36"x28' Putman Lathe, triple geared, face plate drive, 6" belt, quick change, taper attachment.

37" American two head vertical Boring Mill, power feed all directions, unusually fine.

24" Steinle Turret Lathe, brand new.

Ten 24" Steinle Turret Lathes.

Five 8"x60' Fitchburg Lo-Swing Lathes.

5½' Niles-Bement-Pond Radial Drill, very heavy.

4' American plain Radial Drill, single pulley drive, box table, geared feeds.

28" Aurora Vertical Drill Press.

24" Foote-Burt No. 25 Heavy Duty Drill.

Two 24" Stockbridge heavy duty back geared Shapers with vise on table, very modern machines.

No. 4B Brown & Sharpe heavy duty plain Milling Machine, geared head, single pulley drive, used less than three months.

8" Loew Victor Pipe Machine.

600 lb. Lane Steam Drop Hammer.

Special Bargains

21"x96" Landis Universal Grinder with crankshaft grinding attachment.

Pels Power Beam Shear for 15" I beams.

Ten 16-Section Steel Clothes Lockers.

Send for cuts and full specifications, also list of
1000 Air Compressors, Boilers, Pumps, Electrical Equipment.

Our prices represent a substantial saving

Wickes Machinery Company

Jersey City, N. J.

NEW YORK'S GREATEST STOCK

UNDER ONE ROOF — WE OWN THEM ALL

Customers upon visiting our warehouses express surprise at the extent, variety and unusual condition of our stock. We are frequently told by them that nowhere have they seen such modern, clean, attractive machines with reasonable prices and our satisfaction guarantee. May we not number you among our customers?

Boring Mills.

16' Pond-Plainfield vertical, two swivel hds.
9' Pond-Plainfield vertical, two swivel hds.
60" Pond-Plainfield vertical, two swivel hds.
5' Poole vertical, two swivel heads, single pulley, thread cutting attachment.
51" Niles vertical, two swivel heads.
37" Niles vertical, two swivel heads.
No. 3 Betts horizontal, 54" spindle, with motor,--latest type.

No. 2 Barrett horizontal cylinder, 5" bar, spindle, with motor.
Two DeWitt & Harvey, floor type, 3" spindle, with motor.

Bement-Miles horizontal, 31" spindle.
No. 36 Rochester horizontal floor type boring, milling, drilling and tapping machine, 31" spindle, direct connected to motor.

Beaman & Smith floor type boring, drilling and milling machine, 3" spindle.

Beaman & Smith 3-spindle horiz. cylinder. Barnes horizontal boring drilling and tapping machine.

46' Putnam car wheel boring mill with facing head.

Niles car wheel boring mill, table 48" diameter, takes 36" wheels; swinging derrick machine.

Milling Machines.

No. 4 Cincinnati heavy duty vertical.

No. 87 Bliss double geared reducing 12" str. SG-43 Ferracute double crank geared 2" stroke; complete with bolster.
No. 3 Farrell power press, 14" stroke.
54" 200 ton Putnam hydraulic car wh. press.
40" 100-ton hydraulic wheel press.

35 NEW Cleveland 16" x 6' Engine Lathes; substantial machines for all-around service; as cheap as ordinary second-hand lathes; hole through spindle, 1 1/4"; distance between centers, 25"; c. r. p. c. f., 3-step cone, 3 1/2" face; change gears, steady rest, double friction c. s.; weight, 2,200 lbs.; also have square 3-hole turret for carriage.

Slotters

68" Niles-Bement-Pond Geared Slotter, Maximum working stroke 64" distance front of tool apron to frame 44" maximum distance guides above table 55" working surface of square table 54" cross traverse of table 460" longitudinal traverse 60" also rotary feed.
Two 18" Betts, heavy, motor driven, will slot to center of 18".
15" 18" Dill, motor driven.
Two 16" Bement-Miles Slotters.

Cutting-Off Machines
Bement-Miles, double end, 9" capacity.
Two 44" Davis.

Planers-Shapers

No. 1 Hilles & Jones, 14' Plate.
55" x 46" x 15" Lincoln four head stone.
Two 36" x 36" x 12" Pond, one head.
30" x 30" x 12" Harrington, two heads.
30" x 40" x 8" Woodward-Powell, one rail head, two side heads.
26" x 26" x 8" American, one head.
16" x 16" x 12" Walter Bros., one head.
24" Hendey Friction Shaper.
18" Hendey Friction Shaper.
10" x 42" Perkins Traverse Shaper.

Engine Lathes

60" x 18" Fifield, triple grd., comp. rest.
36" x 18" 6" Niles, 12 6" centers.
36" x 18" Niles-B-P., geared hd, motor dr.
Three 30" x 12" Niles-Bement-Pond, grd. hd, hvy. duty, qk. ch. taper, arr. for motor dr.
Five 24" x 14" Prentice geared friction hd., qk. ch., taper, arranged for motor drive.
24" x 10" American, heavy duty, grd. hd., change, arranged for motor drive.
20" x 8" American, 1 1/2-16" hol. spindle c. r. taper.
20" x 12" Prentice, 1" hollow spindle, compound rest, power cross feed.
Twenty NEW 24" x 8" Walcott, quick change double back geared.
20" x 8" H. Johnson qk. ch. hol. bit rest.

facing head.
Miles care/hel byring mill table 48" diam-
eter, takes 25" wheels; swinging derrick
combined machine.

Milling Machines

No. 4 Cincinnati heavy duty vertical.
No. 3 Cincinnati vertical, motor dr.
Three No. 2 Cincinnati vertical.
No. 3 Ingersoll combined horizontal and
vertical, with 10 h. p. General Electric
motor.

Three No. 2 LeBlond plain, back geared.
Two No. 2 Cincinnati universal dividing
head, chuck, vise, vertical attachment.
No. 3 Cincinnati plain, back geared, with
dividing heads and vise.
No. 1 Bickford plain.
Brainard No. 7 Lincoln type.
No. 12 Cincinnati plain manufacturing.
No. 6 Whitney hand.
No. 2 Pratt & Whitney.
Six new Garvin No. 13 plain, back geared.
Two new No. 14 American plain.

Presses.

No. 857 Toledo rack and pinion reducing,
adjustable stroke 5" to 40".
Two No. 856 Toledo rack and pinion redu-
cing, adjustable stroke 5" to 36".
Two No. 666 Toledo knuckle joint presses,
24" stroke.
Three No. 77½ Bias straight sided, double
geared, 12" stroke.
Two 5A Bliss, adjustable bed presses,
str. 24", arranged motor dr. to fly wheel.
Three No. 604 Bliss reducing, rack and
pinion movement, adjustable stroke 4" to
42", weight 12,500 lbs; especially adapted
for drawing shells and tubes up to 21".

Also Screw Machines, Pipe Machines, Bolt Cutters, Grinders, Punches and Shears, Drilling Machines, Etc.

NEW YORK MACHINERY EXCHANGE

Offices: 50 CHURCH STREET, NEW YORK

Telephone—CORTLANDT 6661-6662

Warehouse—JERSEY CITY, 222-238 CULVER AV.

working surface of square table 54" cross
brass, of table 60" longitudinal trav-
els 60" also in every feed.
Two 18" Betts, in 18" motor driven, will
slot to center of 33".
18-18" Drill, motor driven.
Two 16" Bement-Miles Slotters.
16" Betts, heavy, motor driven, will slot to
center of 70".
12" Betts.
10" Betts Slotter.

Gear Cutters

Two 72" Gould & Eberhardt, Spur.
60" Gould & Eberhardt, Spur.
No. 3 Brown Sharpe, Automatic Spur.
24" x9" Gould & Eberhardt, Spur.
19" x5" Lees auto. gr. hbr., spur and spiral.

Turret Lathes

24 NEW Bardons & Oliver No. 4 Screw
machines, fric. grd. hd., regular equip-
ment, collect capacity 14".
Two 3" x36" Jones & L. flat turret lathes.
Five 24" Davis chucking machines.
Bardons & Oliver No. 5 turret lathes, fric.
geared head.
Eight 3A Warner & Swasey, grd. hd., sgl.
pulley drive.

24" x24" Jones & Lamson flat turret lathe,
bar equipment.
48" x36" Bridgeport, back geared, 13" turret
with six 3" holes.
30" x10" Morse, friction head, hollow spindle,
18" hexagon turret with six 3" holes.

21" Gisholt.
16" x5" Monitor, 10" tur. with eight 1" holes.
10" x4" Garvin, back geared, friction head,
7" turret with 14" holes.
9" x38" Windsor, double cut-off rest, round
turret 7" diameter, with six 3" holes.

change, arranged for motor drive.
22" x8" American, 1 1/2" hol. and cr. taper.
20" x12" Apprentice, 1" hollow spindle, com-
pound rest, power cross feed.
Twenty NEW 24" x8" Walcott, quick
change, double back geared.
20" x8" H. Johnson, qk. ch., dbl. bk. grd.
20" x38" Whitcomb-Blaisdell grd. hd., quick-
change gear, sgl. pulley dr., 1 1/2" hollow
spindle, compound rest.
18" x10" Draper, 1 1/2" hol. spdl. comp. rest.
16" x12" Lodge & Shipley, quick change,
taper attachment.
16" x8" Cisco, dbl. bk. grd., quick change.
Twenty-one NEW 16" x8" Rahn-Larmon
Co. qk. ch. dbl. bk. grd., complete.
Five NEW 16" x6" American, qk. change,
pan bed, regular equipment.
Three 16" x6" Lodge & Shipley, geared hd.
Two 16" x6" American, geared head.
15" x8" Pratt & W. semi-quick ch., taper.
Six 15" x5" Whitcomb-B., grd. hd., taper.
Two 14" x7" Lodge-Shipley, qk. ch., pan bed.
14" x7" Bullard, 3" hol. spdl., comp. rest.
14" x6" LeBlond, 1 1/2" hollow spindle, taper,
backing off attachment.
14" x6" LeBlond, 1 1/2" hol. spdl., comp. rest.
Three 14" x6" Lodge-Shipley, qk. ch. taper.
14" x6" Bradford, dbl. bk. grd., taper.
12" x6" Willard.
12" x5" Pratt & W., pan bed, taper attach.

Hammers

1500-lb. Williams & White Board Drop.
900-lb. Merrill Board Drop.
750-lb. Toledo Rope Drop.
600-lb. McDougall & Potter Sgl. Fr. Stm.
150-lb. Hackney Hammer.
75-lb. Style E Fairbanks. Power.
Three 40-lb. Gould & E. Hand Rope Drop.

Our Complete List is Worthy Of Your Attention. Ask For It

22

Slightly used MONARCH Screw Cutting Engine Lathes 19" actual swing—all GEARED HEAD, quick change gears, oil pan, oil pump. Taper attachment. 50% off list price.

11

Willard Tool Room Lathes 13x6 doubled back geared. Completely overhauled. Full standard equipment.

53

New Lathes 11x5, compound rest, power cross feed, hollow spindle. Completely equipped, \$225 each. Remember:—*Brand New.*

34

New Lathes 13x5½—14x6—14x8—16x6—18x6—16x8—18x8, quick change, double back gears—Remarkable Values.

Ask Us First—Save Time and Money

AETNA MACHINERY CORPORATION, Newark, N. J.

What have you to sell? We are quick cash buyers!

BENNETT BARGAINS

Planers

18-22-26-30-32-42-54-60" between housings; 1-2-3-4 heads.

Vertical Boring Mills

30", 36", 40", 51" and 75".

Horizontal Boring Machines

2½", 3", 4"; also 5" Barrett type.

Radial Drills

2½' and 4'—Plain and Universal.

Upright and Multiple Drills

12"-20"-24"-36" and 42"; also 2, 3 and 6 spindle.

Lathes

Various sizes from 14" to 102" swing, 6' to 22' beds.

Turrets

2x24", 3½", 20x6", also 20", 28" and 34".

Milling Machines

46x36x14" Ingersoll 4 heads; 20"x7" Brainerd Slab; No. 3 Newton Duplex; No. 24 Garvin vertical; No. 2 H. & J. vertical; Nos. 4 & 5 B. & S. Plain; No. 2 Plain L. & D; others.

Shapers: 36" and 14". Slotters: 12" Betts, 54".

Also Punches and Shears, Gear Cutters, Grinders, Hammers, Presses, Cranes, Bolt and Pipe Machines

Advise us of all equipment you wish to purchase or sell

G. L. Bennett Machinery Co., Inc.
30 Church Street - - New York City

Bertolette Machine Tool Co.

- 42" Bullard Vertical Boring Mill, one turret and one plain swivel head on cross rail, thread cutting.
- 34" Colburn Vertical Boring Mill, turret head, rapid change gear feed, thread cutting.
- 3½" Bar Niles Horizontal Boring Mill, knee type.
- 3" Bar Betts Horizontal Boring Mill, knee type.
- 8" Stoeber Pipe Machine, single pulley drive.
- 4" Oster Pipe Machine, dies 1" to 4".
- 4" Armstrong Pipe Machine, dies 1" to 4".
- 2" Williams Combination Pipe and Bolt Machine.
- 24" Hendey Shaper, heavy type.
- 16" Smith & Mills Crank Shaper, practically new.
- 15" Flather Crank Shaper, practically new.
- 26"x26"x8' Powell Planer, one head.
- 22"x22"x6' Pond Planer, one head.
- 2¼"x24" Jones & Lamson Geared Head, single pulley drive.
- 28" Gisholt, belt driven, taper attachment.
- 24"x12' Lodge & Shipley, quick change, taper attach.
- 20"x8' Lodge & Shipley, quick change, single pulley drive.
- 60" New Haven Pulley Lathe, 50" centers.

Get our prices before buying elsewhere

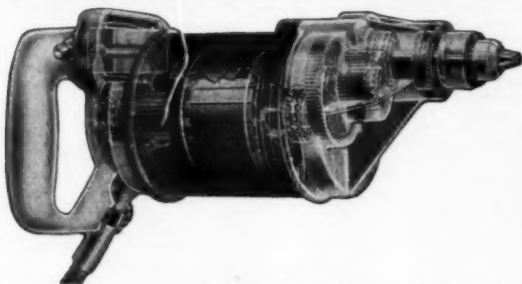
Office: 357 West Side Av., Warehouse: 220-228 Orient Av.,

Jersey City, N. J.

Classified Finding Index

- Abrasives**
Buchanan Co., Thos., Cincinnati
- Air Guns**
Powell Co., Wm., Cincinnati
- Angle Plates**
Boston Scale & Mch. Co., Roxbury, Mass.
Germanow-Simon Machine Wks., Rochester
Heid Brothers, Co., Inc., Beverly, Mass.
Whiting & Comstock, Hartford, Conn.
- Arbors, Roller Grip**
Alert Tool Co., Philadelphia
- Arbors, Solid**
Nicholson & Co., W. H., Wilkes-Barre, Pa.
E. O. Partridge 2047 W. Lake St., Chicago
- Automatics**
McDonough Mfg. Co., Eau Claire, Wis.
National Acme Co., Cleveland.
New Britain Machine Co., New Britain, Conn.
- Balancing Ways**
Anderson Bros. Mfg. Co., Rockford, Ill.
- Ball Bearings**
Abbott Ball Co., Hartford, Conn.
Gwilliam Co., 253 W. 58th St., New York
- Balls, Brass, Bronze and Steel**
Abbott Ball Co., Hartford, Conn.
Gwilliam Co., 253 W. 58th St., New York
- Band Saw Machines, for Metal**
Armstrong-Blum Mfg. Co., 341 N. Francisco
Av., Chicago
- Barrels, Tumbling**
Abbott Ball Co., Hartford, Conn.
Buchanan Co., Thos., Cincinnati
Scully-Jones & Co., Ry. Exch. Bldg., Chicago
- Belt Shifter**
Kramer-Cummins Machine Co., Cleveland
- Benchs, For Toolmakers**
Ritchie-Wertz Co., Dayton, Ohio
- Bench Legs, Steel**
New Britain Mch. Co., New Britain, Conn.
- Bending Machines, Hand and Power**
Hendley & Whittemore Co., Beloit, Wis.
Lewinwhite Co., Geo. A., 116 Walker St., N. Y.
Lourie Mfg. Co., Springfield, Ill.
Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia
- Bending Rolls, Plate and Angle**
Ryerson & Son, Jos. T., Chicago
Wicks Bros., Saginaw, Mich.
- Blow Torch, Gas-Electric**
North American Mfg. Co., Cleveland
- Blue Printing Machines**
Buckeye Engine Co., Salem, Ohio
Paragon Machine Co., Rochester, N. Y.
Wicks Brothers, Saginaw, Mich.
- Bolt and Nut Machinery**
Webster & Perks Tool Co., Springfield, Ohio
- Boring Bars**
Alert Tool Co., Philadelphia
Madison Mfg. Co., Muskegon, Mich.
Pedrick Tool & Machine Co., Philadelphia
Ready Tool Co., Bridgeport, Conn.
Rigid Tool Holder Co., Washington, D. C.
Underwood Corp., H. B., Philadelphia
- Boring Bars, Cylinder**
Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia
- Boring, Drilling and Milling Ma-
chines, Horizontal**
Boeman & Smith Co., Providence, R. I.
Becker Milling Machine Co., Boston
Lambert Machine & Eng. Co., Cleveland
Pawling & Harnischfeger Co., Milwaukee
Ryerson & Son, Jos. T., Chicago
Schipper Machine & Tool Co., Aurora, Ind.
Simmons Machine Co., Albany, N. Y.
- Boring Heads**
Waterston, J. M., Detroit, Mich.
- Boring Machines, Cylinder**
Barrett Mch. Tool Co., Meadville, Pa.
- Boring Machines, Horizontal**
Avey Drilling Machine Co., Cincinnati
Lambert Machine & Eng. Co., Cleveland
Morris Machine Tool Co., Cincinnati
Pedrick Tool & Machine Co., Philadelphia
Rockford Drilling Machine Co., Rockford, Ill.
- Boring and Turning Machines, Vertical**
Cincinnati Planer Co., Cincinnati
Simmons Machine Co., Albany, N. Y.
Turner Machine Co., Danbury, Conn.
- Bowden Wire Mechanism**
Gwilliam Co., 253 W. 58th St., New York
- Brackets, Electric Light**
Newman Mfg. Co., Cincinnati
- Broaches**
Lapointe Co., J. N., New London, Conn.
- Broaching Machines**
Lapointe Co., J. N., New London, Conn.
La Pointe Mfg. Co., Y. E. Manchester, Conn.
Simmons Machine Co., Albany, N. Y.
- Bushings, Brass and Bronze**
Banting Brass & Bronze Co., Toledo, Ohio
- Case Hardening Compound**
Bell & Gosssett Co., 613 W. 30th St., Chicago
Buchanan Chemical Co., C. G., Cincinnati
Buchanan Co., Thos., Cincinnati
- Castellating Machines**
Craftsman Tool Co., Conneaut, Ohio
- Casters for Trucks**
Hamilton Caster & Mfg. Co., Hamilton, Ohio
- Centers, Index**
Abrasive Mch. Tool Co., E. Providence, R. I.
Brown & Sharpe Mfg. Co., Providence, R. I.
Carter & Hakes Mch. Co., W. Winsted, Conn.
Schipper Machine & Tool Co., Aurora, Ind.
Whiting & Comstock, Hartford, Conn.
- Chains, Power Transmission**
Cushman Wheel Co., 1344 Alameda St., Chicago
Morse Chain Co., Ithaca, N. Y.
Whitney Mfg. Co., Hartford, Conn.
- Chasers**
Modern Tool Co., Erie, Pa.
National Acme Co., Cleveland
- Chucking Machines**
New Britain Mch. Co., New Britain, Conn.
Wood Turret Machine Co., Brazil, Ind.
- Chucks, Air**
Frontier Chuck & Tool Co., Buffalo, N. Y.
Payson Co., Frank G., 9 S. Clinton, Chicago
- Chucks, Centering**
McCroskey Tool Corporation, Meadville, Pa.
Thomas Elevator Co., 31 S. Hoyle Ave.,
Chicago
- Chucks, Draw-in and Thrust**
Hardinge Bros., 1770 Berteau Av., Chicago
- Chucks, Drill**
Hartford Special Mch. Co., Hartford, Conn.
Jacobson Mfg. Co., Hartford, Conn.
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Nielsen-Barton Chuck Co., 106 S. Jefferson
St., Chicago
Scully-Jones & Co., Ry. Exch. Bldg., Chicago
Thomas Elevator Co., 31 S. Hoyle Ave.,
Chicago
- Chucks, Drill and Tap**
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Peter Bros. Mfg. Co., Algonquin, Ill.
Scully-Jones & Co., Ry. Exch. Bldg., Chicago

HISEY PORTABLE DRILLS ARE DRILLS



As against a last consideration, HISEY products are designed with Ball Bearing construction. Our new all Ball Bearing Electric Hand Drills of original design, shown above, are made in three sizes of following specifications:

Drilling capacities in steel in inches: 3-16", $\frac{1}{4}$ ", 5-16". Capacities are correspondingly larger for softer materials. Net weight complete in pounds: 6, 8 and 11.

These small hand machines have been designed to meet the requirements of the trade where adaptable service is necessary. Workmanship, material and design is the result of twenty-two years of manufacturing experience in Electrical Tools, and they are HISEY-BUILT throughout, with Universal motor for operation on both Direct Current and Alternating Current of the same voltage.

These new HISEY All Ball-Bearing Hand Drills are time savers and money makers for employer and employee, as the handy and practical design appeals to the workmen—increased production is the result.

Our 16-page Catalog HML, describing these new machines, mailed on request. It will interest you.

We manufacture Electric Screw Drivers and a complete line of Ball-Bearing Grinding Machines

Agencies in all important cities.

The Hisey-Wolf Machine Co.
CINCINNATI, OHIO

Classified Finding Index

Chucks, Keyway Cutting
Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Chucks, Lathe
Dayton Reliance Tool Co., Dayton, Ohio
Thomas Elevator Co., 21 S. Hoyne Ave., Chicago

Chucks, Magnetic
Hesht Machine Co., Worcester, Mass.

Chucks, Wrenchless
Thomas Elevator Co., 21 S. Hoyne Ave., Chicago

Clutches, Friction
Conway & Co., Cincinnati
Edgemont Machine Co., Dayton, Ohio
Milwaukee Shaper Co., Milwaukee, Wis.
National Clutch Co., 1859 Fulton St., Chicago

Cold Saws
Burke Machine Tool Co., Conneaut, Ohio
Cochrane-Bly Co., Rochester, N. Y.
Greenfield Tap & Die Corp., Greenfield, Mass.
Peter Bros. Mfg. Co., Algonquin, Ill.

Contract Work Wanted
Rock Machine Company, Cincinnati
Bonney Vise & Tool Works, Allentown, Pa.
Geuder, Paeschke & Frey Co., Milwaukee, Wis.
New Britain Machine Co., New Britain, Conn.
Robbins, Gamwell & Co., Pittsfield, Mass.
Shaffer, Dehon, Huncy, Pa.
Stebler Machine Co., Utica, N. Y.

Couplings, Friction Clutch
Conway & Co., Cincinnati

Cranes, Hand Power
Euclid Crane & Hoist Co., Euclid, Ohio
Pawling & Harnischfeger Co., Milwaukee, Wis.
Weaver Mfg. Co., Springfield, Ill.

Cranes, Portable
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Canton Foundry & Mch. Co., Canton, Ohio
Weaver Mfg. Co., Springfield, Ill.

Cranes, Traveling
Euclid Crane & Hoist Co., Euclid, Ohio
Pawling & Harnischfeger Co., Milwaukee, Wis.

Crank Pin Turning Machine
Pedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Cranks, Ball
Cincinnati Ball Crank Co., Cincinnati

Cutters, Adjustable
Becker Milling Machine Co., Boston, Mass.
McCroskey Tool Corporation, Meadville, Pa.
Madison Mfg. Co., Muskegon, Mich.

Cutters, Bolt
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.

Cutters, Keyseating
Scully-Jones & Co., Ry. Exch. Bldg., Chicago
Whitney Mfg. Co., Hartford, Conn.

Cutters, Milling
American Mch. Products Co., Detroit, Mich.
Becker Milling Machine Co., Boston, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Clough, R. M., Meriden, Conn.
Genesee Mfg. Co., Rochester, N. Y.
Michigan Tool Co., Detroit, Mich.
Whitney Mfg. Co., Hartford, Conn.

Cutting-Off Machines
Davis Machine Tool Co., Rochester, N. Y.
Etna Mfg. Co., Toledo, Ohio
Peter Bros. Mfg. Co., Algonquin, Ill.
Wood Turret Machine Co., Brazil, Ind.

Cylinder Boring Machines, Portable
Pedrick Tool & Machine Co., Philadelphia
Stow Flexible Shaft Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Cylinder or Dome Facing Machines
Underwood Corp., H. B., Philadelphia

Die Heads, Self-Opening
Modern Tool Co., Erie, Pa.
Murchey Machine & Tool Co., Detroit, Mich.
National Acme Company, Cleveland

Dicing Machines
Henry & Wright Mfg. Co., Hartford, Conn.

Dies, Pipe Threading
Bignall & Keeler Mch. Wks., Edwardsville, Ill.

Dies, Screw and Thread Cutting
Hardinge Brothers, 1770 Bertou Av., Chicago
National Acme Co., Cleveland

Dies, Self-Opening Adjustable
Modern Tool Co., Erie, Pa.
Murchey Mch. & Tool Co., Detroit, Mich.
Rickert-Shafer Co., Erie, Pa.
Victor Tool Co., Inc., Waynesboro, Pa.

Dogs, Machine
Ready Tool Co., Bridgeport, Conn.

Drilling Heads for Square Holes
Fairbanks Company, The, New York

Drilling Machine Heads
Haggle Eng. Co., H. E., Bridgeport, Conn.
Nelson Hanch Mfg. Co., Detroit, Mich.
Newman Mfg. Co., Cincinnati
Rockford Drilling Machine Co., Rockford, Ill.
Sellew Machine Tool Co., Pawtucket, R. I.
Spafford Tool Works, Hartford, Conn.
United States Machine Tool Co., Cincinnati

Drilling Machines, Bench
Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Conneaut, Ohio
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Demco Machine Tool Co., Cleveland
High Speed Hammer Co., Rochester, N. Y.
Reed Co., Francis, Worcester, Mass.
Rockford Drilling Mch. Co., Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Hand
United States Machine Tool Co., Cincinnati

Drilling Machines, Horizontal
Morris Machine Tool Co., Cincinnati
Pawling & Harnischfeger Co., Milwaukee, Wis.
Rockford Drilling Mch. Co., Rockford, Ill.

Drilling Machines, Multiple Spindle
Avey Drilling Machine Co., Cincinnati
Demco Machine Tool Co., Cleveland
Edlund Machinery Co., Inc., Cortland, N. Y.
Henry & Wright Mfg. Co., Hartford, Conn.
National Acme Co., Cleveland
Reed Co., Francis, Worcester, Mass.
Rockford Drilling Mch. Co., Rockford, Ill.
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Portable Electric
Hiney-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Standard Electric Tool Co., Cincinnati
Stow Flexible Shaft Co., Philadelphia
Van Dorn Electric Tool Co., Cleveland
Wisconsin Electric Co., Racine, Wis.

Drilling Machines, Post
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Hammond Mfg. Co., Cleveland, Ohio
Henry & Wright Mfg. Co., Hartford, Conn.
Morris Machine Tool Co., Cincinnati
Mueller Machine Tool Co., Cincinnati
Silver Mfg. Co., Salem, Ohio

Drilling Machines, Radial
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Hammond Mfg. Co., Cleveland
Hawes, G. L., Ashtabula, Ohio
Henry & Wright Mfg. Co., Hartford, Conn.
Morris Machine Tool Co., Cincinnati
Mueller Machine Tool Co., Cincinnati
Pawling & Harnischfeger Co., Milwaukee, Wis.
Ryerson & Son, Jos. T., Chicago
Silver Mfg. Co., Salem, Ohio
Taylor & Fenn Co., Hartford, Conn.
Sipp Machine Co., Paterson, N. J.
Wicks Bros., Saginaw, Mich.

Classified Finding Index

Drilling Machines, Sensitive

Avery Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Conneaut, Ohio
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Demco Machine Tool Co., Cleveland
Edlund Machinery Co., Inc., Cortland, N. Y.
Fenn Mfg. Co., Hartford, Conn.
Harding Brothers, 1770 Berceau Av., Chicago
Henry & Wright Mfg. Co., Hartford, Conn.
Reed Co., Francis, Worcester, Mass.
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.
United States Machine Tool Co., Cincinnati
Wisconsin Electric Co., Racine, Wis.

Drilling, Milling and Boring Machines, Vertical

Aurora Tool Works, Aurora, Ind.
Knight Machinery Co., W. B., St. Louis, Mo.

Drilling Machines, Vertical

Aurora Tool Works, Aurora, Ind.
Avery Drilling Machine Co., Cincinnati
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Davis Machine Tool Co., Rochester, N. Y.
Henry & Wright Mfg. Co., Hartford, Conn.
Hinckley Machine Works, Hinckley, Ill.
Hoosier Drilling Machine Co., Goshen, Ind.
Minster Machine Co., Minster, Ohio
Rockford Drilling Machine Co., Rockford, Ill.
Silver Mfg. Co., Salem, Ohio
Sipp Machine Co., Paterson, N. J.
Taylor & Fenn Co., Hartford, Conn.

Drilling and Tapping Attachments

Aurora Tool Works, Aurora, Ind.
Demco Machine Tool Co., Cleveland
Harris Eng. Co., H. E., Bridgeport, Conn.
Henry & Wright Mfg. Co., Hartford, Conn.
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Newman Mfg. Co., Cincinnati
Payson Co., Frank G., 2 S. Clinton, Chicago
Reed Co., Francis, Worcester, Mass.
Schipper Machine & Tool Co., Aurora, Ind.
Sipp Machine Co., Paterson, N. J.
Turner Machine Co., Danbury, Conn.

Drills, Pneumatic

Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago

Drills, Twist

American Mch. Products Co., Detroit, Mich.

Dust Handling Equipment

Knickerbocker Co., Jackson, Mich.

Emery Stands

Blount Co., J. G., Everett, Mass.
Buchanan Co., Thos., Cincinnati
Marshall Mfg. Co., Indianapolis, Ind.
Partridge, E. O., 2047 W. Lake St., Chicago

Emery Wheel Dressers and Cutters

Buchanan Co., Thos., Cincinnati
Cleveland Flue Cleaner Mfg. Co., Cleveland
Taylor & Fenn Co., Hartford, Conn.

Facing Heads, Automatic

Mummert-Dixon Co., Hanover, Pa.

Feeders, Oil and Soda Water

New Britain Machine Co., New Britain, Conn.

Filing Machines

Cochrane-Bly Co., Rochester, N. Y.

Flexible Shafts

Stow Flexible Shaft Co., Philadelphia, Pa.
Strand & Co., N. A., 649 Washington Blvd., Chicago

Forges

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Forgings, Hollow Bored

American Hollow Boring Co., Erie, Pa.

Furnaces

Bennett Co., W. B., Elmwood, Conn.

Furniture, Machine Shop

New Britain Machine Co., New Britain, Conn.

Gauges, Amplifying, Soap and Plug

American Gauge Co., Dayton, Ohio
North Side Tool Co., Dayton, Ohio

Gauges, Taper

Hartford Special Mch. Co., Hartford, Conn.
Way Co., A. F., Hartford, Conn.

Gauging Machines

Davis Tool Co., Cleveland, Ohio
North Side Tool Co., Dayton, Ohio

Gear Cutting Machines

Brown & Sharpe Mfg. Co., Providence, R. I.

Gears

Boston Gear Works, Quincy, Mass.

Grinding Machines, Bench

Blount Co., J. G., Everett, Mass.
Partridge, E. O., 2047 W. Lake St., Chicago
Webster & Perka Tool Co., Springfield, Ohio

Grinding Machines, Cutter, Reamer and Tool

Blount Co., J. G., Everett, Mass.
Clough, R. M., Meriden, Conn.
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.
Greenfield Machine Co., Greenfield, Mass.
Harris Eng. Co., H. E., Bridgeport, Conn.
McDonough Mfg. Co., Eau Claire, Wis.
Manhattan Machine & Tool Works, Grand Rapids, Mich.

Marshall Mfg. Co., Indianapolis, Ind.
Modern Tool Co., Erie, Pa.
Mummert-Dixon Co., Hanover, Pa.
National Acme Co., Cleveland
Simmons Machine Co., Albany, N. Y.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Cylinder

Heald Machine Co., Worcester, Mass.
Whitney & Son, Baxter D., Winchendon, Mass.

Grinding Machines, Cylindrical

Brown & Sharpe Mfg. Co., Providence, R. I.
Greenfield Machine Co., Greenfield, Mass.
McDonough Mfg. Co., Eau Claire, Wis.
Manhattan Machine & Tool Works, Grand Rapids, Mich.
Modern Tool Co., Erie, Pa.
Ott Grinder Co., Indianapolis, Ind.
Schmidt Co., B. L., Davenport, Iowa
Simmons Machine Co., Albany, N. Y.
Thompson Grinder Co., Springfield, Ohio
Webster & Perka Tool Co., Springfield, Ohio

Grinding Machines, Die

Abrasive Mch. Tool Co., E. Providence, R. I.
Manhattan Machine & Tool Works, Grand Rapids, Mich.
Modern Tool Co., Erie, Pa.
Reed Bros. Co., Inc., Beverly, Mass.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Disc

Badger Tool Co., Beloit, Wis.
Sellew Machine Tool Co., Pawtucket, R. I.

Grinding Machines, Drill

Grand Rapids Grinding Machine Co., Grand Rapids, Mich.
La Salle Tool Co., La Salle, Ill.
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Face

Marshall Mfg. Co., Indianapolis, Ind.
Taylor & Fenn Co., Hartford, Conn.
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Gage

Abrasive Mch. Tool Co., E. Providence, R. I.

Grinding Machines, Internal

Heald Machine Co., Worcester, Mass.
Modern Tool Co., Erie, Pa.
Ott Grinder Co., Indianapolis, Ind.
Taylor & Fenn Co., Hartford, Conn.
Thompson Grinder Co., Springfield, Ohio
Whitney & Son, Baxter D., Winchendon, Mass.
Wilmarth & Morman Co., Grand Rapids, Mich.

Classified Finding Index

Grinding Machines, Oilstone
Mummert-Dixon Co., Hanover, Pa.

Grinding Machines, Portable
Hisey-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Marachke Mfg. Co., Indianapolis, Ind.
Mummert-Dixon Co., Hanover, Pa.
Standard Electric Tool Co., Cincinnati
Stow Flexible Shaft Co., Philadelphia
Strand & Co., N. A., 549 Washington Blvd., Chicago

Van Dorn Electric Tool Co., Cleveland
Wisconsin Electric Co., Racine, Wis.

Grinding Machines, Snagging
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.
Hisey-Wolf Machine Co., Cincinnati
Manhattan Machine & Tool Works, Grand Rapids, Mich.
Marachke Mfg. Co., Indianapolis, Ind.

Grinding Machines, Surface
Abrasive Mche. Tool Co., E. Providence, R. I.
Bristol Machine Tool Co., Bristol, Conn.
Hoid Machine Co., Worcester, Mass.
La Salle Tool Co., La Salle, Ill.
Reid Brothers Co., Inc., Beverly, Mass.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Norman Co., Grand Rapids, Mich.

Grinding Machines, Universal
Brown & Sharpe Mfg. Co., Providence, R. I.
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.
Greenfield Machine Co., Greenfield, Mass.
McDonough Mfg. Co., Eau Claire, Wis.
Modern Tool Co., Erie, Pa.
Ott Grinder Co., Indianapolis, Ind.
Simmons Machine Co., Albany, N. Y.
Thompson Grinder Co., Springfield, Ohio
Webster & Perks Tool Co., Springfield, Ohio
Wilmarth & Norman Co., Grand Rapids, Mich.

Hack Saw Machines
Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Peerless Machine Co., Racine, Wis.

Hammers, Belt and Motor Driven
High Speed Hammer Co., Rochester, N. Y.
Quickwork Co., St. Marys, Ohio

Hammers, Riveting
High Speed Hammer Co., Rochester, N. Y.

Handles, Machine
Cincinnati Ball Crank Co., Cincinnati

Heads, Dividing
Simmons Machine Co., Albany, N. Y.
Willard Press & Tool Co., Cincinnati

Hobbs
Michigan Tool Co., Detroit, Mich.

Hoists, Air
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago

Hoists, Electric
Euclid Crane & Hoist Co., Euclid, Ohio
Thomas Elevator Co., 31 S. Hoyne Ave., Chicago
Weaver Mfg. Co., Springfield, Ill.

Hoists, Electric Traveling
Euclid Crane & Hoist Co., Euclid, Ohio
Fawling & Harnischfeger Co., Milwaukee, Wis.

Hoists, Portable
Canton Foundry & Machine Co., Canton, Ohio

Jigs, Fixtures, Tools, Etc.
American Mche. Products Co., Detroit, Mich.
Craftsman Tool Co., Conneaut, Ohio
Hartford Special Mch. Co., Hartford, Conn.
Hinchley Machine Works, Hinchley, Ill.
Lee Co., Frank H., Danbury, Conn.

Nestor Mfg. Co., 40 W. 13th St., New York
North Side Tool Co., Dayton, Ohio
Spafford Tool Works, Hartford, Conn.
Way Co., A. F., Hartford, Conn.
Whiting & Comstock, Hartford, Conn.

Joints, Universal
Ainslie Mche. & Tool Works, Hartford, Conn.

Keyseating Machines
Rucher-Smith Co., East Liverpool, Ohio
Chattanooga Mch. Co., Chattanooga, Tenn.
Davis Machine Tool Co., Rochester, N. Y.
Lapointe Co., J. N., New London, Conn.
National Machine Tool Co., Cincinnati
Whitney Mfg. Co., Hartford, Conn.

Lathe Accessories and Attachments
Greaves-Kluman Tool Co., Cincinnati
McCrosky Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Sidney Tool Co., Sidney, Ohio
Simmons Machine Co., Albany, N. Y.
South Bend Lathe Works, South Bend, Ind.

Lathes, Bench
Blount Co., J. G., Everett, Mass.
Hardinge Brothers, 1770 Berteau Av., Chicago
South Bend Lathe Works, South Bend, Ind.

Lathes, Engine
Boye & Emmes Machine Tool Co., Cincinnati
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Carroll-Jamieson Mch. Tool Co., Batavia, Ohio
Chard Lathe Co., Newcastle, Ind.
Davis Machine Tool Co., Rochester, N. Y.
Greaves-Kluman Tool Co., Cincinnati
Lehmann Machine Co., St. Louis, Mo.
Monarch Machine Tool Co., Sidney, Ohio
Morris Machine Tool Co., Cincinnati
Mueller Machine Tool Co., Cincinnati
Ryerson & Son, Jos. T., Chicago
Sidney Tool Co., Sidney, Ohio
South Bend Lathe Works, South Bend, Ind.
Willard Machine Tool Co., Cincinnati
Wicks Bros., Saginaw, Mich.

Lathes, Flat Turret
Acme Machine Tool Co., Cincinnati

Lathes, Horizontal Turret
Acme Machine Tool Co., Cincinnati
Chard Lathe Co., Newcastle, Ind.
Davis Machine Tool Co., Rochester, N. Y.
Smarr & Kamen Co., 328 N. Albany Ave., Chicago
Steinle Turret Machine Co., Madison, Wis.
Wood Turret Machine Co., Brazil, Ind.

Lathes, Short Cut
Adams Mfg. Co., O. R., Rochester, N. Y.
Sidney Tool Co., Sidney, Ohio

Lathes, Speed and Hand
Blount Co., J. G., Everett, Mass.

Lathes, Tilted Turret
Wood Turret Machine Co., Brazil, Ind.

Lockers, Shelving and Cupboards, Steel
Terrell's Equipment Co., Grand Rapids, Mich.

Mandrels, Expanding
Alert Tool Co., Philadelphia
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Payson Co., Frank G., 9 S. Clinton, Chicago

Mandrels, Solid
American Mche. Products Co., Detroit, Mich.
Nicholson & Co., W. H., Wilkes-Barre, Pa.

Metal Cutting Machines, Sheet
Ryerson & Son, Jos. T., Chicago
Savage Co., W. J., Knoxville, Tenn.
Way Co., A. F., Hartford, Conn.

Classified Finding Index

Milling Attachments

Brown & Sharpe Mfg. Co., Providence, R. I.
Burke Machine Tool Co., Conneaut, Ohio
Hinckley Machine Works, Hinckley, Ill.
Knight Machinery Co., W. B., St. Louis, Mo.
Payson Co., Frank G., 9 S. Clinton, Chicago
Whiting & Comstock, Hartford, Conn.
Willard Press & Tool Co., Cincinnati

Milling Machines, Automatic

Becker Milling Machine Co., Boston, Mass.

Milling Machines, Bench

Burke Machine Tool Co., Conneaut, Ohio
Carter & Hakes Mch. Co., W. Winsted, Conn.
Hardinge Brothers, 1770 Hertau Av., Chicago
Simmons Machine Co., Albany, N. Y.

Milling Machines, Hand

Bristol Machine Tool Co., Bristol, Conn.
Burke Machine Tool Co., Conneaut, Ohio
Carter & Hakes Mch. Co., W. Winsted, Conn.
Davenport Mfg. Co., Meadville, Pa.
Whitney Mfg. Co., Hartford, Conn.

Milling Machines, Horizontal

Beaman & Smith Co., Providence, R. I.
Becker Milling Machine Co., Boston, Mass.
Gooley & Edlund, Cortland, N. Y.

Milling Machines, Plain

American Milling Machine Co., Cincinnati
Beaman & Smith Co., Providence, R. I.
Becker Milling Machine Co., Boston, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Burke Machine Tool Co., Conneaut, Ohio
Cochrane-Bly Co., Rochester, N. Y.
Davenport Mfg. Co., Meadville, Pa.
Gooley & Edlund, Cortland, N. Y.
Ryerson & Son, Jos. T., Chicago

Milling Machines, Portable

Fedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Milling Machines, Universal

American Milling Machine Co., Cincinnati
Becker Milling Machine Co., Boston, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Cochrane-Bly Co., Rochester, N. Y.
Ryerson & Son, Jos. T., Chicago

Milling Machines, Vertical

Beaman & Smith Co., Providence, R. I.
Becker Milling Machine Co., Boston, Mass.
Bristol Machine Tool Co., Bristol, Conn.
Brown & Sharpe Mfg. Co., Providence, R. I.
Burke Machine Tool Co., Conneaut, Ohio
Clough, R. M., Meriden, Conn.
Cochrane-Bly Co., Rochester, N. Y.
Knight Machinery Co., W. B., St. Louis, Mo.
Taylor & Fenn Co., Hartford, Conn.

Mills, Adjustable Hollow

Genesee Mfg. Co., Rochester, N. Y.

Motors, Electric

Reliance Electric & Eng. Co., Cleveland
Wisconsin Electric Co., Racine, Wis.

Nut Facing Machines

Victor Tool Co., Inc., Waynesboro, Pa.

Oil Cups

American Galco Company, Grand Central
Palace, New York
Gits Bros. Mfg. Co., 1940 S. Kilbourne Av.,
Chicago
Tucker, W. C. & F. C., Hartford, Conn.

Oil Hole Covers

Tucker, W. C. & F. C., Hartford, Conn.

Oils, Quenching

Bell & Gossett Co., 613 W. 30th St., Chicago

Parallels, Adjustable

Harth Mfg. Co., O. B., Hartford, Conn.

Pattern Shop Machinery

Chicago Mch. Exchange, 1219 Washington
Bldg., Chicago
Cochrane-Bly Co., Rochester, N. Y.
Silver Mfg. Co., Salem, Ohio
Towley Mfg. Co., John T., Cincinnati

Pipe Bending Machines

Fedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Pipe Cutting and Threading Machines

Signal & Keefer Mch. Wks., Edwardsville, Ill.
Simmons Machine Co., Albany, N. Y.

Planer Attachment, Radius

Underwood Corp., H. B., Philadelphia

Planer Tools, Circular

Underwood Corp., H. B., Philadelphia

Planers, Valve Seat, Portable

Fedrick Tool & Machine Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Planing Machines, Metal

Cincinnati Planer Co., Cincinnati
Lee Co., Frank H., Danbury, Conn.
Ryerson & Son, Jos. T., Chicago

Pneumatic Tools

Independent Pneumatic Tool Co., 600 W.
Jackson Blvd., Chicago

Polishing and Buffing Machines

Blount Co., J. G., Everett, Mass.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
New Britain Machine Co., New Britain, Conn.
Partridge, E. O., 2047 W. Lake St., Chicago
Stow Flexible Shaft Co., Philadelphia
Webster & Perks Tool Co., Springfield, Ohio
Wilmarth & Morgan Co., Grand Rapids,
Wisconsin Electric Co., Racine, Wis. (Mich.)

Presses, Arber

Atlas Press Co., Kalamazoo, Mich.
Bartlett, Edwin E., Nashua, N. H.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Lourie Mfg. Co., Springfield, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Weaver Mfg. Co., Springfield, Ill.

Presses, Broaching

Atlas Press Co., Kalamazoo, Mich.
Bartlett, Edwin E., Nashua, N. H.
Lourie Mfg. Co., Springfield, Ill.

Presses, Foot

Atlas Press Co., Kalamazoo, Mich.
Leathwaite Co., Geo. A., 116 Walker St., N. Y.
Lourie Mfg. Co., Springfield, Ill.
Rockford Iron Works, Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.
Partridge, E. O., 2047 W. Lake St., Chicago

Presses, Power

Loebhough-Jordan T. & M. Co., Elkhart, Ind.
Rockford Iron Works, Rockford, Ill.
Willard Press & Tool Co., Cincinnati

Presses, Punch

Enterprise Machinery Co., 32 S. Clinton St.,
Chicago
Henry & Wright Mfg. Co., Hartford, Conn.
Leathwaite Co., Geo. A., 116 Walker St., N. Y.
Loebhough-Jordan T. & M. Co., Elkhart, Ind.
Lourie Mfg. Co., Springfield, Ill.
Partridge, E. O., 2047 W. Lake St., Chicago
Rockford Iron Works, Rockford, Ill.

Presses, Screw

Atlas Press Co., Kalamazoo, Mich.
Lourie Mfg. Co., Springfield, Ill.
Manhattan Machine & Tool Works, Grand
Rapids, Mich.
Towley Mfg. Co., John T., Cincinnati
Weaver Mfg. Co., Springfield, Ill.

Pulley Machinery

Avey Drilling Machine Co., Cincinnati

Classified Finding Index

Pollers, Iron, Solid and Split

Conway & Co., Cincinnati
National Clutch Co., 1869 Fulton St., Chicago
Fryott Fdry. Co., 829 N. Sangamon St. Chicago

Pumps, Centrifugal

Lee-Courtenay Company, Newark, N. J.

Pumps, Fire

Lee-Courtenay Company, Newark, N. J.

Punch Press Feeds

Rockford Iron Works, Rockford, Ill.

Punches, Hand

Armstrong-Bium Mfg. Co., 341 N. Francisco
Av., Chicago
Hendley & Whittemore Co., Beloit, Wis.

Punches, Power

Clough, R. M., Meriden, Conn.
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Ryerson & Son, Jos. T., Chicago
Wickes Bros., Saginaw, Mich.

Punches and Dies

Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Lewthwaite Mch. Co., T. H., 416 E. 31st St.,
North Side Tool Co., Dayton, Ohio
Rockford Iron Works, Rockford, Ill.

Quenching Bath

Bennett Metal Treating Co., Elmwood, Conn.

Racks, Bar Stock

Yohs Supply Co., Wm. S., Canton, Ohio

Reamer Holder, Floating

Victor Tool Co., Inc., Waynesboro, Pa.

Reamers, Adjustable

Cashman Tool Co., Waynesboro, Pa.
Clough, R. M., Meriden, Conn.
McCroskey Tool Corporation, Meadville, Pa.

Reamers, Cylinder

Hinckley Machine Works, Hinckley, Ill.
McCroskey Tool Corporation, Meadville, Pa.

Reamers, Solid

American Mch. Products Co., Detroit, Mich.
Clough, R. M., Meriden, Conn.
McCroskey Tool Corporation, Meadville, Pa.
Ready Tool Co., Bridgeport, Conn.

Reels, Extension

Cincinnati Specialty Mfg. Co., Cincinnati

Riveting Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.
High Speed Hammer Co., Rochester, N. Y.
Independent Pneumatic Tool Co., 801 W.
Jackson Blvd., Chicago

Roll Cutters

Armstrong-Bium Mfg. Co., 341 N. Francisco
Av., Chicago

Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Tucker, W. C. & F. C., Hartford, Conn.

Roller Bearings

Gwilliam Co., 253 W. 58th St., New York

Scraping Machines, Pneumatic

Anderson Brothers Mfg. Co., Rockford, Ill.

Screw Driving Machines, Automatic

Reynolds Machine Co., Massillon, Ohio

Screw Machines, Automatic

Brown & Sharpe Mfg. Co., Providence, R. I.
Cincinnati Automatic Mch. Co., Cincinnati
National Acme Company, Cleveland
New Britain Mch. Co., New Britain, Conn.

Screw Machines, Plain or Hand

Acme Machine Tool Co., Cincinnati
Smurr & Kamen Co., 328 N. Albany Av.,
Chicago
Wood Turret Machine Co., Besaff, Ind.

Screws, Cap and Set

National Acme Company, Cleveland

Second-Hand Machinery Dealers

Adams, Orden R., Rochester, N. Y.
Aetna Machinery Corp'n, Newark, N. J.
Allen Mch. Co., B. C., 104 S. Clinton St.,
Chicago

Badger-Packard Mch. Co., Milwaukee, Wis.
Bath & Co., Cyril J., Cleveland, Ohio
Bauschke Machinery Co., Cleveland
Bennett Machinery Co., G. L., 39 Church
St., New York

Bertoletto Mch. Tool Co., Jersey City, N. J.
Biggs-Watterson Co., Cleveland
Broadway Machinery Co., Cincinnati
Brown-McDonald Mch. Co., St. Louis, Mo.
Brownell Machinery Co., Providence, R. I.
Co-Operative Machinery Co., Cleveland
Dale-Brewster Mch. Co., 541 Washington
Blvd., Chicago

Easley Machinery Co., E. L., 555 Washington
Blvd., Chicago
Federal Mch. Sales Co., 13 N. Jefferson St.,
Chicago

Fitzgerald & Co., W. H. J., Boston, Mass.
Graves Mch. Exc., 50 Church St., New York
Harris Bros. Co., W. 35th & Iron, Chicago
Hill, Clarke & Co., 625 Wash't'n Bl., Chicago
Industrial Mch. Corp'n., Jersey City, N. J.
Johnston Co., Wm. T., Cincinnati

Johnson & Sons Machinery Co., Wm. G.,
Kinsey Co., S. A., Cincinnati
Lucas & Son, J. L., Bridgeport, Conn.
Lynd-Farguhar Co., Boston, Mass.

McCabe Lathes & Machinery Corp., J. J.,
149 Broadway, New York

McGaw-Brendt Mch. Co., Pittsburgh, Pa.
McMullen Mch. Co., Grand Rapids, Mich.
Marshall & Hueschert Machinery Co., 17 S.
Jefferson St., Chicago

Molitor Mch. Co., Chas., 215 S. Clinton St.,
Chicago

Morey and Company, Inc., Broome & La-
fayette Sts., New York

Morton Machinery Co., Philadelphia
Motch & Merryweather Mch. Co., Cleveland
New York Machinery Exchange, 50 Church
St., New York

Niles-Bement-Pond Co., 111 Broadway, N. Y.
Norton Bros. Machinery Co., Cincinnati

O'Brien Machinery Co., Philadelphia
Osborne & Sexton Mch. Co., D. M., Cleveland
Osborne & Sexton Mch. Co., Columbus, O.

Osgood, J. L., Buffalo, N. Y.
Parker Co., Frank H., 911 First Nat'l Bank
Bldg., Chicago

Pattison Supply Co., W. M., Cleveland
Prentiss & Co., Henry, Singer Bldg., N. Y.

Russell Machine Co., Pittsburgh, Pa.
Ryerson & Son, Jos. T., Chicago

Simmons Machine Co., Albany, N. Y.
Smith Machinery Co., H. A., Syracuse, N. Y.

Stocker-Rumely-Wacha Co., 117 N. Jefferson
St., Chicago

Strong, Carlisle & Hammond Co., Cleveland
Syracuse Supply Co., Syracuse, N. Y.

Thompson Co., C. M., 35 S. Clinton St., Chicago
Toomey, Inc., Frank, Philadelphia

Tubor, Velick & Co., 631 W. Lake St., Chicago
Vonnegut Machinery Co., Indianapolis, Ind.

Walsh Machinery Co., M. J., Milwaukee, Wis.
Warner, H. D., Hartford, Conn.

Wayne Mch. Co., Fort Wayne, Ind.
Wicks Machinery Co., Jersey City, N. J.

Winterer, Herman L., Philadelphia
White Mch. Co., A. D., 108 N. Jefferson
St., Chicago

Wright, David A., 546 Washington Blvd.,
Chicago

Shafts, Flexible

Stow Flexible Shaft Co., Philadelphia

Shafts, Steel

American Hollow Boring Co., Erie, Pa.

Shaping Machines

Cochrane-Bly Co., Rochester, N. Y.
Columbia Machine Tool Co., Hamilton, Ohio
Davis Machine Tool Co., Rochester, N. Y.
Milwaukee Shaper Co., Milwaukee, Wis.
Osborne & Sexton Mch. Co., Columbus, O.

Rhodes Mfg. Co., Hartford, Conn.
Sellew Machine Tool Co., Pawtucket, R. I.

Classified Finding Index

Shaping Machines—Continued.

Simmons Machine Co., Albany, N. Y.
Smith & Mills Co., Cincinnati
Streine Tool & Mfg. Co., New Bremen, Ohio

Shears, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco
Av., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.
Tucker, W. C. & F. C., Hartford, Conn.

Shears, Power

Hendley & Whittemore Co., Beloit, Wis.
Ryerson & Son, Jos. T., Chicago

Sine Bars

Way Co., A. F., Hartford, Conn.

Slotting Machines

Clough, R. M., Meriden, Conn.
Rhodes Mfg. Co., Hartford, Conn.
Ryerson & Son, Jos. T., Chicago

Sprockets

Culman Wheel Co., 1344 Altgeld St., Chicago

Steel, High Speed

Herbert, Ltd., Alfred, 64 Day St., New York

Steel, Tool

Herbert, Ltd., Alfred, 64 Day St., New York

Stock Supports

Way Co., A. F., Hartford, Conn.

Swaging Machines

Etna Mfg. Co., Toledo, Ohio

Tables, Circular

Cochrane-Bly Co., Rochester, N. Y.
Hinckley Machine Works, Hinckley, Ill.
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.

Tap Extractors

Walton Co., Hartford, Conn.

Tap Wrenches

Alert Tool Co., Philadelphia

Tapping Machines and Attachments

Avery Drilling Machine Co., Cincinnati
Beaman & Smith Co., Providence, R. I.
Bicknell-Thomas Co., Greenfield, Mass.
Burke Machine Tool Co., Conneaut, Ohio
Fenn Mfg. Co., Hartford, Conn.
Hammond Mfg. Co., Cleveland
Jarvis Co., Charles L., Gildersleeve, Conn.
McCroskey Tool Corporation, Meadville, Pa.
Modern Tool Co., Erie, Pa.
Rickert-Shafer Co., Erie, Pa.
Turner Machine Co., Danbury, Conn.
Webster & Perkins Tool Co., Springfield, Ohio
Whitney Mfg. Co., Hartford, Conn.
Workwell Eng. & Mfg. Co., 616 W. Monroe
St., Chicago

Taps, Collapsing

Modern Tool Co., Erie, Pa.
Murchey Machine & Tool Co., Detroit, Mich.
Victor Tool Co., Inc., Waynesboro, Pa.

Taps and Dies

National Acme Company, Cleveland
Victor Tool Co., Inc., Waynesboro, Pa.

Threading Tools

Armstrong Bros. Tool Co., 308 N. Francisco
Av., Chicago

Modern Tool Co., Erie, Pa.
Murchey Machine & Tool Co., Detroit, Mich.
National Acme Company, Cleveland
Ready Tool Co., Bridgeport, Conn.

Tool Holders

Armstrong Bros. Tool Co., 308 N. Francisco
Av., Chicago
Ready Tool Co., Bridgeport, Conn.
Rigid Tool Holder Co., Washington, D. C.
Wood Turret Machine Co., Brazil, Ind.

Tools, Boring

Alert Tool Co., Philadelphia
American Mch. Products Co., Detroit, Mich.

Armstrong Bros. Tool Co., 308 N. Francisco
Av., Chicago
Rigid Tool Holder Co., Washington, D. C.

Tools, Lathe and Planer

Armstrong Bros. Tool Co., 308 N. Francisco
Av., Chicago
Ready Tool Co., Bridgeport, Conn.

Tools, Machinists'

Armstrong Bros. Tool Co., 308 N. Francisco
Av., Chicago
Brown & Sharpe Mfg. Co., Providence, R. I.

Tools, Spot Facing

Genesee Mfg. Co., Rochester, N. Y.

Tooth Rounding Machines

Cross Gear & Engine Co., Detroit, Mich.

Trucks, Machine Shop

Fairbanks Company, The, New York
New Britain Machine Co., New Britain, Conn.
Towsley Mfg. Co., John T., Cincinnati

Turntables

Canton Foundry & Machine Co., Canton, O.

Turret Heads, for Lathes

Newman Mfg. Co., Cincinnati

Valves

Fairbanks Company, The, New York
Powell Co., Wm., Cincinnati

Valve Seat Planing Machines, Portable

Stow Flexible Shaft Co., Philadelphia
Underwood Corp., H. B., Philadelphia

Vises, Drilling Machine

Almale Mch. & Tool Works, Hartford, Conn.
Armstrong-Blum Mfg. Co., 341 N. Francisco
Av., Chicago
Armstrong Bros. Tool Co., 308 N. Francisco
Av., Chicago

Carter & Hakes Mch. Co., W. Winsted, Conn.
Cincinnati Vise Co., Cincinnati
Germanow-Simon Machine Wks., Rochester
Hollands Mfg. Co., Erie, Pa.
Hoosier Drilling Machine Co., Goshen, Ind.
Martin Tool & Die Co., Springfield, Ohio
Nestor Mfg. Co., 40 W. 13th St., New York
Payson Co., Frank G., 9 S. Clinton, Chicago
Sprague-Hayes Mfg. Co., Detroit
Thomas Elevator Co., 31 So. Hoyne Ave.,
Yost Mfg. Co., Meadville, Pa. [Chicago]

Vises, Machinists'

Baker Cutlery & Hardware Co., 101 Thorne
St., New York
Hollands Mfg. Co., Erie, Pa.
New Britain Machine Co., New Britain, Conn.
Yost Mfg. Co., Meadville, Pa.

Vises, Milling Machine

Carter & Hakes Mch. Co., W. Winsted, Conn.
Cochrane-Bly Co., Rochester, N. Y.
Edlund Machinery Co., Inc., Cortland, N. Y.
Germanow-Simon Machine Wks., Rochester
Hardinge Brothers, 1770 Berteau Av., Chicago
Hartford Special Mch. Co., Hartford, Conn.
Hollands Mfg. Co., Erie, Pa.
Hoosier Drilling Machine Co., Goshen, Ind.
Nestor Mfg. Co., 40 W. 13th St., New York
Payson Co., Frank G., 9 S. Clinton, Chicago
Sellew Machine Tool Co., Pawtucket, R. I.
Spafford Tool Works, Hartford, Conn.
Yost Mfg. Co., Meadville, Pa.

Vises, Shaper

Columbia Machine Tool Co., Hamilton, Ohio
Hoosier Drilling Machine Co., Goshen, Ind.

Washing Machines for Cleaning Metal Parts

Crescent Washing Machine Co., 843 Larrabee
St., Chicago

Wood Working Machinery

Chicago Mch. Exchange, 1211-27 Washington
Blvd., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Cincinnati Vise Co., Cincinnati
Silver Mfg. Co., Salem, Ohio
Towsley Mfg. Co., John T., Cincinnati
Whitney & Son, Baxter D., Winstendon, Mass.

Index of Advertisers

Abbott Ball Co.....	89	Carter & Hakes Machine Co....	32
Abrasive Machine Tool Co.....	107	Cashman Tool Co.....	145
Acme Machine Tool Co.....	8	Chard Lathe Co.....	10
Adams Manufacturing Co., O. R.....	19	Chattanooga Machinery Co.....	93
Adams, Ogden R.....	206	Chicago Machinery Exchange.....	16
Aetna Machinery Corp'n.....	212	Cincinnati Automatic Mch. Co....	6
Ainslie Machine & Tool Works.....	88	Cincinnati Ball Crank Co.....	158
Alert Tool Co.....	144	Cincinnati Planer Co.....	7
Allen Machinery Co., B. C.....	178	Cincinnati Specialty Mfg. Co.....	142
American Galco Company.....	122	Cincinnati Vise Co.....	52
American Gauge Co.....	83	Cleveland Flue Cleaner Mfg. Co.	50
American Hollow Boring Co.....	130	Clough, R. M.....	34
American Machine Products Co....	140	Cochrane-Bly Co.....	29
American Milling Machine Co.....	31	Columbia Machine Tool Co.....	24
Anderson Bros. Mfg. Co.....	80	Contract Work Wanted.....	164-165
Armstrong-Blum Mfg. Co.....	129	Conway & Co.....	78
Armstrong Bros. Tool Co.....	158	Co-Operative Machinery Co.....	204
Atlas Press Co.....	128	Craftsman Tool Co.....	144
Aurora Tool Works.....	59	Crescent Washing Machine Co....	41
Avey Drilling Machine Co.....	61	Cross Gear & Engine Co.....	37
		Cullman Wheel Co.....	84
Badger-Packard Mchy. Co.....	185		
Badger Tool Co.....	113	Dale-Brewster Mchy. Co.....	190
Barrett Machine Tool Co.....	46	Davenport Manufacturing Co.....	32
Barlett, Edwin E.....	89	Davis Tool Co.....	82
Bath & Co., Cyril J.....	168-169	Davis Machine Tool Co.....	95
Bauschke Machinery Co.....	180	Day Machinery Co.....	208
Beaman & Smith Co.....	155	Dayton Reliance Tool Co.....	149
Beaver Machine & Tool Co.....	167	Demco Machine Tool Co.....	56
Becker Milling Machine Co.....	35		
Bell & Gossett Co.....	76	Edgemont Machine Co.....	80
Bennett Machinery Co., G. L.....	212	Edlund Machinery Co., Inc.....	69
Bennett Co., W. R.....	156	Enterprise Machinery Co.....	132-185
Bennett Metal Treating Co.....	74	Easley Machinery Co., E. L.....	182
Bertollette Machine Tool Co.....	213	Etna Manufacturing Co.....	136
Bicknell-Thomas Co.....	152	Euclid Crane & Hoist Co.....	90
Biggs-Watterson Co.....	202		
Bignall & Keeler Mche. Works.....	135	Fairbanks Company, The.....	151
Bleser Manufacturing Co., J.....	167	Federal Machinery Sales Co.....	184
Blount Co., J. G.....	109	Fenn Mfg. Co.....	104
Boch Machine Co.....	164	Fitzgerald & Co., W. H. J.....	208
Boker Cutlery & Hardware Co....	70	Frontier Chuck & Tool Co.....	223
Bonney Vise & Tool Works.....	165		
Boston Gear Works.....	39	Genesee Mfg. Co., Inc.....	146-147
Boston Scale & Machine Co.....	159	Germanow-Simon Machine Wks.	64
Boye & Emmes Mche. Tool Co.	21	Geuder, Paeschke & Frey Co.....	165
Bristol Machine Tool Co.....	106	Gits Bros. Mfg. Co.....	122
Broadway Machinery Co.....	203	Gooley & Edlund, Inc.....	36
Brown-McDonald Mchy. Co.....	177	Grand Rapids Grinding Mche. Co.	105
Brown & Sharpe Mfg. Co.....	5	Grant Mfg. & Machine Co.....	116
Brownell Machinery Co.....	169	Graves Machinery Exchange.....	193
Buchanan Chemical Co., C. G....	75	Greaves-Klusman Tool Co.....	9
Buchanan Co., Thos.....	76	Greenfield Machine Co.....	120
Bucher-Smith Co.....	94	Gwilliam Company, The.....	86
Buckeye Engine Co.....	160		
Bunting Brass & Bronze Co.....	163	Hamilton Carter & Mfg. Co.....	74
Burke Machine Tool Co.....	34-58	Hammond Manufacturing Co.....	45
		Hardinge Bros., Inc.....	150
		Harris Brothers Co.....	175
		Harris Engineering Co., H. E.	106-154
		Hartford Special Machinery Co....	68
Candy-Otto Mfg. Co.....	53		
Canton Foundry & Mche. Co....	90		
Carroll-Jamieson Mche. Tool Co.	22		

The Lavoie Air Chuck

The Simplest and Best



Made in many sizes

Made in seven types

Six types of universal
or combination jaws

Don't confuse the "Lavoie" with other air chucks. It is simpler and better and inexpensive to install. Already used in a number of the best plants of the country, in some of which they "didn't want air chucks" until they saw the "Lavoie."

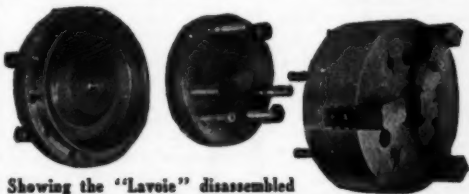
We avoid the heavy cylinder on rear end of spindle and combine the chuck, cylinder and piston in a single unit, simplifying its construction and application to the work. The clamping mechanism is of the lever and wedge type—absolutely no gears. A releasing spring eliminates the necessity for double piping and economizes air.

You will be interested in the full description. Your address?

Frontier Chuck & Tool Co.

36 Letchworth St.,

Buffalo, N. Y.



Showing the "Lavoie" disassembled

Index of Advertisers—Continued

Hawes, C. L.....	42	Mueller Machine Tool Co.....	49
Heald Machine Co.....	121	Mummert-Dixon Co.....	18
Hendley & Whittemore Co.....	125	Murchev Machine & Tool Co....	137
Henry & Wright Mfg. Co.....	65	National Acme Company.....	3
Herbert, Ltd., Alfred.....	140	National Clutch Co.....	78
Herith Mfg. Co., O. B.....	112	National Machine Tool Co.....	96
High Speed Hammer Co.....	63-73	Nelson-Blanch Mfg. Co.....	54
Hill, Clarke & Co., of Chicago...	201	Nestor Mfg. Co., Inc.....	64
Hinckley Machine Works.....	36	New Britain Mche. Co....	164-225-228
Husey-Wolf Machine Co.....	215	Newman Manufacturing Co.....	14
Hollands Manufacturing Co.....	70	New York Machinery Exchange	210-211
Hoosier Drilling Machine Co.....	60	Nicholson & Co., W. H.....	97
Horat, J.....	167	Nielsen-Barton Chuck Co.....	52
Independent Pneumatic Tool Co.	117	Niles-Bement-Pond Co.....	183
Industrial Machinery Corp'n.....	187	North American Mfg. Co.....	156
Jacobs Mfg. Co.....	139	North Side Tool Co.....	82
Jarvis Co., Chas. L.....	152	Norton Brothers Machinery Co...	167
Johnson & Sons Mch'y. Co., Wm. C.	174	O'Brien Machinery Co.....	174
Kinsey Co., E. A.....	184	Osborne Machinery Co., D. M....	205
Knickerbocker Co.....	77	Osborne & Sexton Machinery Co.	24-170-198
Knight Machinery Co., W. B.....	57	Osgood, J. L.....	167
Kremer-Cummins Machine Co.....	4	Ott Grinder Co.....	110
Lambert Mche. & Engineering Co.	48	Paragon Machine Co.....	162
Lapointe Co., J. N.....	94	Parker Co., Frank H.....	171
La Pointe Mfg. Co., V. E.....	92	Partridge, E. O.....	134
La Salle Tool Co.....	100-101	Pawling & Harnischfeger Co....	48
Lea-Courtenay Co.....	96	Payson Company, Frank G.....	142
Lee Co., Frank H.....	25	Pedrick Tool & Machine Co.....	51
Lehmann Machine Co.....	16	Peerless Machine Co.....	127
Lewthwaite Co., George A.....	131	Perfection Auto Parts Co.....	164
Lewthwaite Machine Co., T. H.....	130	Peter Bros. Mfg. Co.....	126-148
Loebdough-Jordan T. & M. Co....	124	Powell Co., The Wm.....	62
Lourie Mfg. Co.....	128	Prentiss & Co., Henry.....	196
Lucas & Son, Inc., J. L.....	188-189	Pyott Foundry Co.....	79
Lynd-Farquhar Co.....	198	Quickwork Co.....	124
McCabe Lathe & Machinery		Ready Tool Co.....	126
Corporation, J. J.....	192	Reed Co., Francis.....	56
McCoy-Brandt Machinery Co....	176	Reid Brothers Co., Inc.....	157
McCrosky Tool Corporation.....	141	Reliance Elect. & Engineering Co.	2
McDonough Mfg. Co.....	104	Reliance Machinery Sales Co....	180
McMullen Machinery Co.....	200	Reynolds Machine Company.....	161
Madison Manufacturing Co.....	138	Rhodes Mfg. Co.....	27
Manhattan Mche. & Tool Works	99	Rickert-Shafer Co.....	153
Manchike Manufacturing Co., Inc.	119	Rigid Tool Holder Co.....	138
Marshall & Huchart Mch'y. Co....	204	Ritchie-Wertz Co.....	72
Martin Tool & Die Co., J. E.....	66	Robbins, Gamwell & Co.....	164
Michigan Tool Co.....	38	Rockford Drilling Machine Co....	44
Milwaukee Shaper Co.....	28	Rockford Iron Works.....	132
Minster Machine Co.....	50	Russell Machine Co., Inc.....	179
Modern Tool Co.....	227	Ryerson & Son, Joseph T.....	43
Molitor Machinery Co., Chas.....	178	Savage Co., W. J.....	136
Monarch Machine Tool Co.....	20	Schipper Machine & Tool Co.....	38
Morris Machine Tool Co.....	42	Schmidt Co., B. L.....	108
Morse Chain Co.....	86	Scully-Jones & Co.....	91
Morton Machinery Co.....	194	Second-Hand Machinery... 167 to 213	
Motch & Merryweather Mch'y.			
Company.....	191		

The "New Britain" Adjustable Shop Stool

Fixed or Portable. With Spring Back if Desired.



If the chair at your desk is a couple of inches too high or too low, you cannot work nearly so well. The same principle applies to the workman's stool.

Stools of a fixed height are made for the man of average stature—too low for the short man and too high to enable the tall man to produce at his best.

You'll find that a small investment in "New Britain" Adjustable Shop Stools pays unusual dividends by increasing the comfort and improving the working capacity of your bench hands.

Write for Bulletin No. 1204

The New Britain Machine Company

**"Shop Furniture
Originators"**



**New Britain,
Conn. U.S.A.**

Index of Advertisers—Continued

Sellew Machine Tool Co.....	54	Underwood Corporation, H. B.....	166
Shaffer, Delos.....	165	United States Mche. Tool Co.....	30
Sidney Machine Tool Co.....	12		
Silver Manufacturing Co.....	47	Van Dorn Electric Tool Co.....	111
Simmons Machine Co.....	207	Victor Tool Company.....	150
Sipp Machine Co.....	67	Vonnegut Machinery Co.....	195
Smith & Mills Co.....	26		
Smith Machinery Co., H. A.....	206	Walsh Machinery Co., M. J.....	202
Smurr & Kamen Co.....	15	Walther Machinery Co.....	170
South Bend Lathe Works.....	13	Walton Co.....	154
Spafford Tool Works.....	62	Warner, H. D.....	182
Sprague-Hayes Mfg. Co.....	66	Waterston, J. M.....	68
Standard Electric Tool Co.....	116	Way Co., A. F., Inc.....	112
Steber Machine Co.....	164	Wayne Machinery Co.....	199
Steinle Turret Machine Co.....	11	Weaver Mfg. Co.....	87
Stickley Mchy. Co., E. B.....	172	Webster & Perks Tool Co.....	118
Stocker-Rumely-Wachs Co.....	181	White Machinery Co., A. D.....	169
Stoehr, A. M.....	180	Whiting & Comstock.....	40
Stow Flexible Shaft Co.....	110	Whitney Mfg. Co.....	33
Strand & Co., N. A.....	108	Whitney & Son, Baxter D.....	102
Streine Tool & Mfg. Co.....	26	Wickes Brothers.....	160
Strong, Carlisle & Hammond Co.....	173	Wickes Machinery Co.....	209
Syracuse Supply Co.....	200	Willard Machine Tool Co.....	17
		Willard Press & Tool Co.....	40-134
Taylor & Fenn Co.....	133	Wilmarth & Morman Co.....	103
Terrell's Equipment Co.....	85	Winterer, Herman L.....	172
Thomas Elevator Co.....	143	Wisconsin Electric Co.....	114-115
Thompson Grinder Co.....	123	Wood Turret Machine Co.....	23
Toomey, Inc., Frank.....	176	Workwell Eng. & Mfg. Co.....	148
Towsley Mfg. Co., John T.....	14	Wright, David A.....	197
Tubor, Velick & Co.....	182		
Tucker, W. C. & F. C.....	81	Yobe Supply Co., Wm. S.....	98
Turner Machine Co.....	55	Yost Manufacturing Co.....	71

A CHAIN

The advertisers in the Tool List pay Hitchcock. He sends you the Tool List free. You buy the articles advertised. The chain is complete.

BUT—

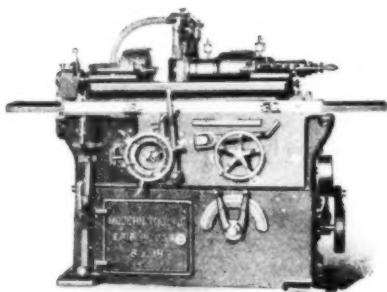
—suppose the advertisers do not know that you saw it in the Tool List—where does Hitchcock come in? When writing to advertisers, won't you kindly give Hitchcock credit?

6
0
1
0
5
2
0
4
2
8
2
9
7
8
9
0
3
2
0
9
7
4
3
2
5
3
8
7
8
1



MODERN

Plain Grinding Machines



Made in 10 Sizes—8"x18" to 16"x60"

FEATURES:—

- Exceptional Rigidity,
- Silent Chain Work Drive,
- Full Self-Contained,
- Controls Centered on Front,
- Fully Guarded.

Send for complete technical Bulletin

MODERN TOOL CO.
ERIE, PA.

Main Office & Works: Second & Peach Sts.

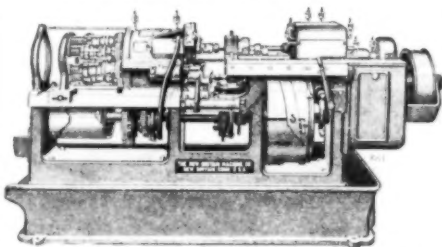
Branch Offices: Detroit, Philadelphia, Cleveland and Buffalo

Sales Agents in: New York, Chicago, St. Louis and Minneapolis

Six Spindles

Increase output
50 to 200 per cent

Compare
the
Output



"N. B." Six-Spindle Automatic Screw Machine

The three main factors in its exceptional production are—

- (1) Its capacity for handling work requiring more end operations than can be performed on machines having fewer spindles.
- (2) The possibility of greater subdivision of operations on work of a simpler character.
- (3) The most rigid construction, which permits heavier cuts and coarser feeds without impairment of accuracy.

*Glad to furnish you with complete description
and to discuss its application to your work.
Your inquiry may lead to splendid savings.*

The New Britain Machine Company

Automatic
Screw and Chucking
Machines



New Britain,
Connecticut,
U.S.A.

